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⑥ AN EVALUATION OF ORGANIZATION EFFECTIVENESS: A LONGITUDINAL INVESTIGATION OF THE EFFECTS OF SURVEY FEEDBACK AS AN ACTION RESEARCH INTERVENTION ON UNIT EFFICIENCY, EMPLOYEE AFFECTIVE RESPONSE, INTERGROUP RELATIONS AND SUPERVISORY CONSIDERATION IN THE U.S. ARMY.

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⑩ Jerome Adams

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To: "Aquaman and Batman"

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ABSTRACT

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An Evaluation of Organization Effectiveness: A Longitudinal Investigation of the Effects of Survey Feedback as an Action Research Intervention on Unit Efficiency, Employee Affective Response, Intergroup Relations, and Supervisory Consideration in the U.S. Army. Major Professor: John J. Sherwood.

This study reports the results of a six month action research project designed to evaluate the effects of survey feedback used as an intervention strategy within engineer units in a military setting.

The data used in this thesis were collected as part of an Army funded program to evaluate organization effectiveness programs in military units. The self report data were collected through three surveys designed in part by the author and administered to the soldiers at the research site which consisted of almost 300 individuals. In addition, data were taken from official, unclassified military reports and records and from on-site observations by this author. The primary dependent variables included: a) unit efficiency, b) measures of soldier attitudes, both general and specific satisfactions, c) intergroup relations, d) supervisory consideration, e) absenteeism, f) punishment, and g) reenlistments.

It was hypothesized that the experimental treatment units would have a significant improvement in organization

effectiveness following the survey feedback intervention. It was also hypothesized that soldiers within the experimental units would have improvements in their levels of work satisfaction. Additionally, it was hypothesized that the survey feedback units would have better intergroup work relations. Finally, it was hypothesized that soldiers within the experimental units would perceive greater supervisory consideration for soldiers' work related problems.

In addition to the specific hypotheses, the effects of survey feedback on measures of absenteeism, punishment, and reenlistment were investigated. Finally, the possible moderating influences of individual higher order need strength, and the effect of the leadership style of the unit commanders were examined.

The major findings of the study were that:

- (1) Experimental treatment units showed a greater improvement in organization efficiency as a result of the survey feedback manipulation in one of three work categories tested.
- (2) General satisfaction for one experimental condition improved, but it declined for the other experimental condition. Specific satisfaction increased for both of the experimental treatment conditions. However, the positive increases noted in the experimental conditions were not statistically greater than those of the control conditions.

- (3) Intergroup relations improved in 7 of 8 units which comprise the two experimental treatment conditions. However, the improvements were not statistically significant when comparisons were made with the control conditions.
- (4) One experimental treatment condition's results supported the hypothesis of greater supervisory consideration, the other experimental treatment disconfirmed the hypothesis. Also, there was no statistically significant difference between all treatment conditions concerning the amount of supervisory consideration (Wanted).
- (5) The investigation of the ancillary measures of absenteeism, punishment, and reenlistment found no specific improvements in these measures as a result of the survey feedback intervention.
- (6) The possible moderating influences of individual growth need strength and commander's leadership styles on intervention effectiveness were investigated. No moderating relationships were found.

Conclusions about evaluating organization effectiveness programs in work settings were also discussed. Finally, recommendations have been made about the practical implications of this study in the U.S. Army.

INTRODUCTION

During the period 1973 through 1975, the United States Army conducted a pilot program designed to adopt proven management concepts and practices, which when incorporated within military units, would improve the effectiveness of these units. This program included such organization development activities as job enrichment, participative management, team building, and the creation of an assessment center.

One tangible result of the pilot effort is the Army's Organizational Effectiveness Program.

Organization Effectiveness has been defined as a process designed to strengthen the chain of command, increase individual and unit effectiveness, create an organizational commitment to which personnel are actively and enthusiastically involved in planned actions to improve the unit's performance in meeting its mission of being combat ready and effective at all times. - OETC

This program provides for the training and assignment of military career officers as Organization Effectiveness Staff Officers (internal consultants). Two internal consultants (OESO) are assigned within each of the Army's division sized units. These internal consultants (OESOS) work with commanders to implement organization effectiveness interventions, which are designed to seek solutions to the particular problems of the unit involved. The process is controlled by the internal consultant and conducted by the personnel of that command.

Organization effectiveness activities have been conducted within divisional units since August or September, 1975. The program designers are now interested in an evaluation research program which will compile valid, empirically based data regarding the effectiveness of Army-wide employment of organizational programs and activities. Toward this end, the Organizational Effectiveness Training Center in Ft. Ord, California has commissioned several studies to evaluate three major components of the Army's Organizational Effectiveness efforts. These three components are: (1) the organizational climate of the unit under consideration, (2) the role of the organizational effectiveness staff officer (internal consultant), and (3) the processes used by the internal consultant to assist the unit in achieving a greater level of effectiveness. It is this third component, the intervention process, that this author chose to evaluate by conducting field experimental research.

Although the other two components are important and worthy of research and rigorous evaluation, the most important question seems to be: are there any real (measurable) differences in unit effectiveness resulting from organization development interventions?* In terms of evaluation research, the intent is to measure the effects of an organizational effectiveness program against the goals it set out to

* The term Organization Effectiveness is used in the Army to denote Organization Development.

accomplish (Weiss 1972). Do interventions for Organizational Effectiveness produce outcomes of improved work efficiency, job satisfaction, and better working relationships?

This dissertation reports the results of an action research program designed to evaluate the effects of survey feedback as an intervention process, which could assist military units to achieve a greater level of operational effectiveness. This research is unique in several respects. A quasi-experimental design was employed which included comparable units which underwent experimental, placebo, and no-treatment conditions. The model proposed in the research design was strictly followed. In addition, the interventionist and evaluator roles were separate.

The instruments used as measures for specific dependent variables tap several dimensions of human fulfillment. The research was longitudinal in nature. Historical reports were available for several months preceding the pre-test, and these documents provided rich data for time series comparisons. Finally the site of the study was deliberately confined to one homogeneous organization to enhance the comparative findings between the experimental, placebo, and control conditions.

LITERATURE REVIEW

The literature review section which follows contains five portions. The first consists of a definition of survey feedback. The second describes the major components of survey feedback which follow and which are measurable. The third portion briefly traces the historical development of survey feedback. Portion four describes in detail the survey feedback model used in this research. Portion five summarizes the major findings of the literature, and the focus of this study is offered.

Definition

Action research is defined by French and Bell (1973) as ". . . the application of the scientific method of fact-finding and experimentation to practical problems requiring action solutions and involving the collaboration and cooperation of scientists, practitioners, and laymen" (p. 87). Thus, action research is a means of problem solving. A specific series of activities and events make up the problem solving process. The series of events and actions involved in action research are labeled by Beckhard (1969) as: data collection, feedback of the data to the client, and action planning based on that data. Therefore, by viewing action research as an

approach to problem solving which involves a series of events and activities, action research in organization development can be more completely defined as:

"...the process of systematically collecting research data about an ongoing system relative to some objective, goal, or need of that system; feeding these data back into the system; taking actions by altering selected variables within the system based both on the data and on hypotheses; and evaluating the results of actions by collecting more data" (French & Bell, 1973, pp. 84-85).

Action research studies reported in the literature use a data gathering and feedback technology which today is colloquially called survey feedback. Survey feedback is defined by Miles et al. (1969) as "a process in which outside staff and members of the organization collaboratively gather, analyze, and interpret data which deal with various aspects of the organization's functioning and its member's work lives, and using the data as a base begin to correctly alter the organizational structure and the members' work relationship" (p. 458). Detailed descriptions of survey feedback processes operationalized from an action research plan are provided by Mann (1961), Neff (1965), Miles et al. (1969), French and Bell (1973), Frohman, Sashkin, and Kavanagh (1976), and Beer (1976). All of the writings cited promote the survey feedback process as collaborative efforts between the interventionist and the client members in gathering data about organizational processes, jointly analyzing the data, interpreting action plans which when evaluated should indicate some organizational improvements.

Survey Feedback Components

Survey Feedback has three operational components which are presented in some detail by Miles et al. (1969) in Figure 1. First, the data are collected and prepared for presentation. Second, meetings of various family groups occur. Third, in the course of these meetings, the interventionist helps the clients to accept the data and the group members may even begin to analyze where improvement can be made in their interactions.

The survey feedback process usually starts with a questionnaire although interview data can also be used (Beckhard, 1967). Because it is important that the client members accept the data, their involvement in the development of questionnaire items or at least raising issues which will serve as the basis for the items is important. A number of questionnaire instruments have been devised to collect and organize data which can be used in organizational diagnosis and later fed back to client members. Many surveys exist, and the interventionist can also help the client membership to construct its own survey. The interventionist would assist in the formulation of the questionnaire items dealing with specific constructs and in the development of scales for measurement. In order to assist the client members in these processes, the interventionist must be well trained in research and theory. Bennis (1969) comments on the pitfalls of implementing planned change: "Planned change may be viewed as a linkage between theory and practice, between knowledge and

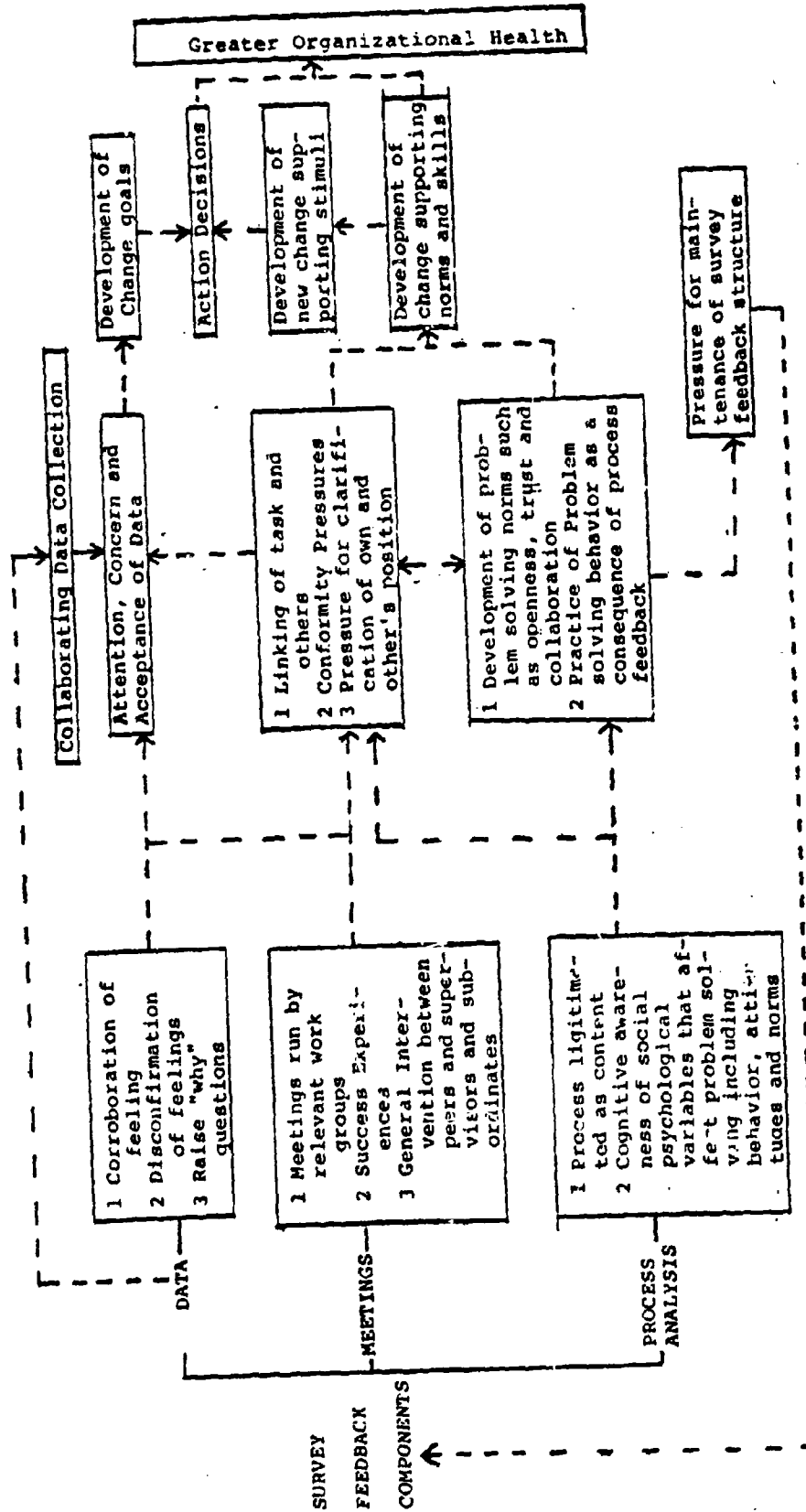


Figure 1

Three Components of Survey Feedback
Miles, Hornstein, Callahan, Calder & Schiavo

action; hence, theory based interventions. The process of planned change involves a change agent, a client system, and a collaborative attempt to apply valid knowledge to seek solutions to the client's problems" (p. 358). Survey feedback is an attempt to combine scientific rigor in measurement with feedback techniques. However, Chase (1968) suggests that scientific rigor is much less crucial than ownership of the data and commitment to action. Therefore, survey feedback data usually deal with organizational issues such as roles, intergroup relations, supervision, communication, employee attitudes about the nature of the work itself, and the organization climate.

Meetings for the feedback of the results are an important part of the feedback process. Meetings have been found to result in more satisfaction and ownership of the feedback process than feedback through written reports (Beer, 1976). Similarly, multiple meetings were found by Klein, Kraut, and Wolfson, (1971) to be more effective than a single meeting. Meetings are effective because they seem to have an "unfreezing" effect by creating pressure on individuals to own up and clarify their views before a group. The group meeting also creates pressure on the individuals to evaluate their views about organizational problems in light of the prevailing viewpoint of the majority of the group. Most frequently, the meetings are held in "family" groups, which consist of a supervisor and the employees under his or her

immediate span of control. One approach to data feedback is through a series of interlocking conferences with family groups starting at the top and moving down through the organization. The feedback of information is conducted by each supervisor in what is called a waterfall pattern. Often, this systematic downward pattern is difficult to enact. Time, travel, and work crises cause some meetings to occur in the absence of a few individuals. This situation will cause minimum difficulties provided the missing person is not the linkage to another family group. If he is, some rescheduling or updating must occur before action planning is translated into specific actions. Another survey feedback approach has been labeled bottoms-up because the data are fed back to lower organization levels first. The, action plans are formulated at the lower levels and passed up to ascending levels.

As family groups continue to meet, two sets of norms begin to operate. One set, which is in operation as soon as the family group owns the data fed back, facilitates the communication of information. These can be thought of as norms centering around issues of trust and openness. This is not a spontaneous process, and often takes a considerable amount of time to develop fully. The implicit assumption is that open two-way communication facilitates the amount and accuracy of information which in turn improves problem solving. The second set of norms are those which reward collaborative activity, assist in the determination of actions, and promote group

pressures for conformity to these actions (Miles et al. 1969).

Finally, if the interventionist acts as a facilitator rather than an expert with the group, effective problem solving will be done by the client group, and the members are likely to arrive at greater agreement and support about what the appropriate actions are to resolve the problem. By assisting in the clarification of data, prompting discussion and focusing the group's energy on identifying problems and the processes involved in working out solutions, the client group becomes its own change agent with the added capability of using these skills again and again as the need arises.

Historical Development

Action research from which survey feedback has evolved, is not a new approach in organization development. Historically, it can be traced to the works of several persons (Lewin, 1947; Corey, 1953; Lippitt, Watson & Westley, 1958; Mann, 1961; Whyte, 1961; and Whyte & Hamilton, 1964.

Lewin's (1946) work with social agency practitioners attempted to eradicate prejudice using an action research process. He wrote that:

In a field that lacks objective standards of achievement, no learning can take place. If we cannot judge whether an action has led forward or backward, if we have no criteria for evaluating the relation between effort and achievement, there is nothing to prevent us from making the wrong conclusions and to encourage the wrong work habits. Realistic fact-finding and evaluation is a prerequisite for any learning (p. 35).

In his three-stage model of action research, Lewin describes three phases:

- unfreezing
- moving
- refreezing.

This technique, is oversimplified by today's standards, because it fails to consider pre-diagnosis and evaluation of results. Nevertheless, it served two useful purposes. It provided specific solutions to immediate client problems, and second, the project results generated new behavioral science knowledge which could be used or built upon by others.

Corey (1953) wrote that "The process by which practitioners attempt to study their problems scientifically in order to guide, correct, and evaluate their decisions and actions is what a number of people have called action-research" (p. 6).

Lippitt et al. (1958) developed an action research model by expanding Lewin's three-stage model into seven phases:


- establishing a need for change
- establishing a change relationship between client and change agent
- data collection and diagnosis
- action planning
- action implementation
- generalization and stabilization of change
- termination of the change relationship.

Whereas this model is more detailed than the earlier Lewinian approach, Lippitt and his colleagues fail to explicate fully the important feedback process in their paradigm. Mann (1961) describes more fully the importance of the feedback process. He notes that "Involvement and participation in the planning, collection, analysis, and interpretation of information initiate powerful forces for change. Own facts are better understood and more likely to be utilized than those of some 'outside expert.' Participation in analysis and interpretation helps by-pass those resistances" (p. 613).

Whyte (1961) and Whyte and Hamilton (1964) report the effective use of action research in a program designed to assist the operation of the Tremont Hotel in Chicago. The outcome of developing new problem-solving skills for the client is illustrated in the following passage.

. . . consultation did not involve simply presentation of advice on the supervisor's problems. Direct advice from the personnel man was minimized. Instead, he emphasized the presentation of data illustrating the problems of the department. He then discussed these problems with the supervisor and encouraged the supervisor himself to suggest what might be done. In many cases it was the supervisor who came out with an idea that formed the keystone to the action program in his department. Wiley did not aim to solve the human problem himself. His objective was to build a problem-solving organization (1961, p. 524).

Whyte further writes that: "As fully as I can, I have tried to lay before the reader the data from which I seek to draw my theoretical conclusions . . . The progress of knowledge depends upon this confrontation of theory by data: the discovery of data that do not fit the theory and the discovery



out of theory of new types of data that we need to gather" (1961), p. 527).

Other behavioral scientists (Benedict, Calder, Callahan, Hornstein, & Miles, 1967; Alderfer & Ferriss, 1972; Brown, 1972; Clark, 1972; and Frohman, Sashkin, & Kavanagh, 1976) have contributed to a better understanding of action research. A brief summary of their more contemporary findings will be noted in the discussion of the action research model selected for this research. The model is presented in Figure 2.

General Model

This model, which consists of eight or ten cyclic steps, is depicted below:

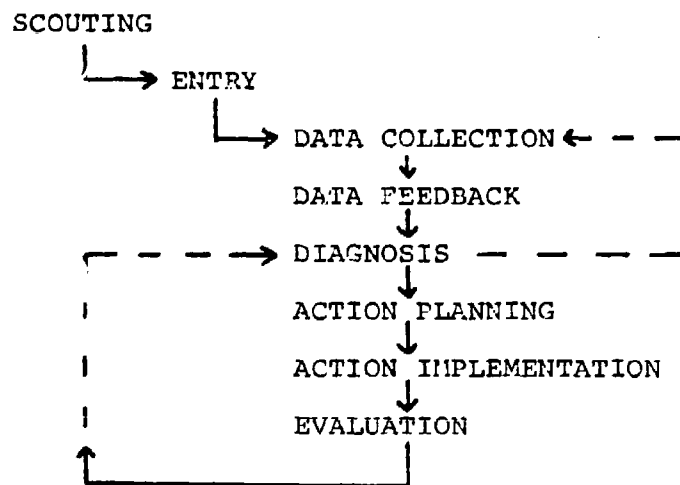


Figure 2. General Model of Survey Feedback

The total process is based upon the interdependent, interactive, and sometimes overlapping phases of action (entry, data feedback, action planning, and action implementation) and research (scouting, data collection, diagnosis, and

evaluation). Below, each of the phases of this model is listed and briefly defined in the context of organization development practice.

Scouting. The organization development interventionist develops an initial fix on the perceived significant characteristics and problems of the prospective client system. These issues are reviewed by the interventionist in light of his own assumptions, biases, and values. Frohman et al. (1976) note it is important that the interventionist consciously understands his own analytic framework or bias which he uses to arrange and interpret information about the organization. Argyris (1975) calls this framework the development of an organizational map. Thus, the interventionist exposes his assumptions, biases, and values to the potential client, who in turn provides the interventionist feedback about how the values and biases fit the framework of understanding of client system members. This open exchange helps to generate a collaborative interventionist-client relationship from the very beginning. Prediagnosis or scouting allows the interventionist to devote attention to historical and unanticipated forces which may subtly precede and perhaps influence the outcome of the action research (Pasmore, 1975). Greiner (1967) writes that researchers and change agents need to give greater weight to historical determinants of change including some emphasis to the relationship between an organization and its environment. Failure to do so will encourage a lack of systematic understanding of why a particular OD intervention

succeeded in one organization but seemed to fail in a similar organization. The data obtained in the scouting phase will be instrumental in helping the interventionist and client decide whether they will enter into a formal relationship, and if so, at what point or level in the organization will the entry take place.

Entry. This consists of several process activities. First is the need to build a collaborative and open interventionist-client working relationship. This step is important because both interventionist and client must feel comfortable that they can work with each other in such a fashion. The success of any action research approach requires involvement and commitment both of client and of interventionist not just one or the other. A second entry activity is a clear understanding of the expectations of both parties. Benedict et al. (1967) suggest a clinical-experimental basis for predicting reasonable outcomes of action research. They argue that the responsibility is clearly that of the interventionist to make precise clinical predictions: what variables will this intervention change in this particular organization in what direction and why? Third, the interventionist will demonstrate certain kinds of entry behavior which are designed to help to establish his credibility to those in power positions in the client system who can openly sanction the intervention activities. Clark (1972) reports that the lack of such clear support from key persons in the client system ususally results

in less than optimal outcomes or even failure. He attributes the failure of a particular action research program to a lack of understanding and true commitment by the client system's top management. Whereas, the lower managers were told that the board supported the survey feedback intervention, the actual behavior of board members gave lower level managers conflicting signals. Therefore, norms of openness and trust failed to develop in the data feedback sessions.

Data Collection. Unlike the prediagnostic scouting done by the interventionist, data collection involves the client member to a great extent in selecting the method and in the actual collection of the data. The major purpose of the data collection phase is to obtain valid information about client member perceptions and experiences within an organization. In pursuit of this objective, the interventionist and client may use several traditional methods of data gathering. These generally include but are not limited to archival records, observational systems, interviews, surveys, and appropriate unobtrusive measures. Each of these diagnostic technologies has distinct strengths and weaknesses. Bednor, Weet, Lanier, and Meinick (1974) suggest that intervention outcomes will be more effective if the interventionist has a broad general knowledge of what diagnostic technologies are most appropriate in a given setting. However, the amount and quality of information available is greatly influenced by the relationship between its source and the investigator. It is now well-established that experimenter expectancy and demand characteristics of the

situation have a substantial impact on data collected both in laboratory settings (Orne, 1962; Rosenthal, 1966) and in field settings (Friendlander, 1968; Cook and Campbell, 1976).

Brown (1972) reports that the subject of an investigator's study is simultaneously studying the investigator and making decisions about the quantity and quality of information he will provide. If the participant believes that the investigator will use sensitive information in ways which are helpful or at least not harmful, he is more likely to be open. The results of Brown's study revealed that the process of verifying the diagnosis actually led to positive changes in participative involvement in organizational life as well as to the validation of the diagnosis. That is, as the quality of understanding increased, there was increased engagement in the organization. Pasmore (1975) suggested "whenever one relies upon a client's own diagnosis of his problem or upon an intervention technique which requires a client self-diagnosis, that diagnosis is likely to be shaded by a significant degree of artifact. To the extent that such artifact effects the consultant's selection of an intervention technique or focus of effort, and to the extent that it biases the evaluation of his effort within the client system, the consultant's effectiveness is likely to be reduced" (p. 30). Hence the interventionist must have a valid understanding of the underlying theories and the reasonable outcomes of the intervention technologies chosen.

Data Feedback. This phase provides the client with data about the client system which is useful in determining the relative strengths of the system and areas where improvement is most needed. Data feedback serves several functions. It is an opportunity for the interventionist and client to share their findings usually by a series of meetings designed to facilitate full exploration and joint understanding of the data. As a general rule, data feedback is likely to provoke some defensiveness and resistance by some members of the client system. In an action research study, Alderfer and Ferriss (1972) found that high level managers were not more likely to acknowledge that they had more problems than those managers at lower levels in the organization. Alderfer and Ferriss conclude that this denial interpretation by top managers occurred because the family group setting did not provide enough psychological safety for the top managers to permit them to really come to terms with the data. Therefore, their response was defensive. To minimize any possible adversary relationship between client and interventionist or among the client system members themselves, Alderfer (1974) recommends two facilitative feedback means: one, the information presented and discussed should be minimally inferential and second, to offer explanations for the data tentatively as hypotheses or themes for discussion rather than as concrete conclusions. The feedback meeting then becomes the setting where the client members are involved in generating additional data to support or disclaim the findings for each other. The

design of feedback meetings depends on the nature of the findings and how the information was agreed to be shared.

Diagnosis. Diagnosis consists of the joint use of the data by the client system members and the interventionist to explore organizational problems and strengths. (The artificiality of independently describing various action research phases makes the activities of one appear to be quite similar to the succeeding phase. Obviously, the phases are interrelated and often overlap such that an independent discussion of correlative phases is partially redundant). In action research based approaches to organization development, diagnosis is a joint activity of the interventionist and the client. Thus, ownership and commitment on the part of client members are enhanced by their specific contribution to problem diagnosis, and appropriate diagnosis will lead directly to inferences for actions needed to resolve the problems (Neff, 1965). It is possible that further study is needed for a more accurate diagnosis. If so, the cyclic property of the model encourages a return to the data collection phase. Finally, the diagnosis or research phase is sequentially followed by action activities.

Action Planning. The interventionist is purposefully functioning as a process helper and as a trainer. One goal is to develop internal problem solving skills. Therefore, the involvement of the client is increased in that the client participates in the planning of change activities. To insure that client problem-solving skills and resources become

operationalized and to continue to minimize defensiveness, the interventionist avoids being the expert problem solver, because to do so the client will learn little of the skills or processes needed in problem solving when the interventionist leaves. Rather, the interventionist acts as a catalyst to insure that process interaction analysis takes place. By assisting in the clarification and ownership of the data, stimulating the discussion and focusing the energy of the group on identifying problems and developing their own solutions, the interventionist maximizes the opportunity for people to solve their own problems. Thus, client members attempt to practice new behaviors in response to feedback; group norms develop which facilitate and encourage expression of feelings and self corrective behavior, and members are rewarded by the group for seeking and accepting responsibility for problem solving and in developing action plans.

Action Implementation. Generally this consists of the implementation of specific problem-solving actions which will improve the client system's effectiveness. The content of the action implementation phase depends on the situation and the nature of the problems diagnosed. Therefore, the actual actions can vary greatly. The success of action implementation requires consideration of two activities. First, before an action is to be implemented, the parties involved must clearly understand what has to be done, by whom, and by when. Second, there must be some means to follow up. This is done by the action research process. Thus, the model ends with the

evaluation which serves as the basis for further data collection.

Evaluation. This last step advises the client as to whether the changes accomplished the intended outcomes, and the results of the evaluation serve as a basis for further diagnosis and action planning. If successful, then the immediate problems will have been ameliorated or solved; the client system will have skills and resources to use for future problem solving activities, and the interventionist can contribute the outcomes toward better developing the theory underlying organization development.

The action research model reported here is similar to several others reported in the literature. Whereas the phases of other models may differ slightly (Lippitt et al. 1958; French 1969; Frohman et al. 1976), the underlying assumptions are the same. That is, the action research model is based upon collaboration between the behavioral scientist-researcher and the client. They collaborate in: (1) exploring problems and generating relevant data concerning the problems (2) examining the information to understand the problems and develop action plans for their solution (3) actually implementing the plans (4) generating data regarding the effects of the action. Thus, the evaluation of results would serve as data to be used for further problem diagnosis, action planning, action implementation, and evaluation. The sequence is cyclical; immediate problems are addressed, and the client learns how to incorporate a science-based model of problem-solving for future issues.

Frohman et al. (1976) summarizes: "In addition to providing effective solutions to specific client problems and developing new problem-solving skills for the client, a successful action research project generates new behavioral science knowledge which is fed back into the professional bank of information and used by other behavioral scientists. This new knowledge is obtained through the research activity of the applied behavioral scientist. It may deal with general laws about human behavior, or the type of problems with which the client is confronted, or the process of consultant-client collaboration. In any case, it addresses issues broader than the specific problems faced by the client" (p. 131).

Major Findings of Research on Survey Feedback

Research on survey feedback provides some evidence to suggest that the feedback process itself can effect change. In the original Detroit Edison work, Baumgartel (1959) found that perception of supervisory behavior changed as a consequence of increased information flow and problem confrontation between hierarchical levels after feedback. That is, the feedback process helped to open up channels normally blocked by hierarchies and power differentials. Chase (1968) found that survey feedback was effective in equalizing power, so that even in an extremely threatening environment, confrontation occurred.

It also seems clear that survey feedback can lead to attitudinal changes by participants. The research by Miles

et al. (1969) report improved satisfaction with decisions even though they were not carried out. Brown (1972) found evidence that participant involvement in the organization increased as a result of survey feedback intervention. Bowers (1973) reported that the survey feedback technique was more effective than other processual interventions in producing attitudinal changes and changes in leadership and climate variables. Hand, Estafen, and Sims (1975) research involving survey feedback in a laboratory simulation, found that experimental groups were more satisfied with their performance than no treatment control groups.

However, long term changes in individual behavior and performance appear to be contingent on more than just survey feedback (Friedlander & Brown, 1974). Survey feedback should not be an isolated diagnostic event. Action planning on specific problems is important to longer term success of survey feedback.

The previous descriptions of the phases and the review of studies which ascribe to an action research model underscore the need for a number of critical conditions to be met. There should be a process of collaboration between the client and the interventionist throughout each phase of the action research program. The interventionist must determine that the client understands the long-term procedure required and that the client is committed throughout, once agreement has been made. Effective client-consultant collaboration not only helps the client with his immediate problems but more

importantly, it facilitates in helping the client to learn the problem-solving process. Client involvement also ensures that each phase of the program is carried out.

Summary

In summary, the studies using action research have demonstrated that (1) the feedback process itself can effect change. How much influence can be causally attributed to the survey feedback itself as opposed to a "Hawthorne Effect" is an area of concern for future research. It also seems clear that (2) survey feedback can lead to attitudinal changes by participants. However, much of the empirical support of this claim is of a self report nature. More methodological control is needed in future research to discern if self disclosed responses are accurate or contaminated by artifacts attributed to social desirability (Golembiewski & Munzenrider 1975). Finally, (3) more research is needed to clarify the impact of the action research process on organization improvement. That is, does the effect of survey feedback enhance the overall effectiveness of organizations? Some attempt to begin to explicate solutions to these three issues is the focus of this research.

HYPOTHESES

The hypotheses section consists of four parts. In part one, the specific hypotheses to be tested in the research are provided. These are, of course, the principal concern of this study. Part two consists of moderating variables which could influence the results of the study. Part three consists of additional research issues which are described as ancillary measures. No a priori hypotheses have been offered for these issues because the theoretical and empirical research to date is unclear. Finally, clinical observations are added by the author as an attempt to provide the reader with a more accurate and complete understanding of what actually took place in the planning and conduct of the evaluation research.

Specific Hypotheses

There are a number of possible hypotheses which could be formulated from the literature review and the preceding discussion. Those advanced here are considered to be the most relevant and testable, given the constraints and limitations of field research.

- H₁: Intervention Effectiveness. The experimental treatment units will have a significant improvement in organization effectiveness following the survey feedback intervention. The placebo and control units will have no significant changes in organization effectiveness.
- H₂: Affective Responses to Work: The soldiers within the experimental treatment units will have greater improvements in their levels of job satisfaction and internal work motivation than soldiers within placebo and control units.
- H₃: Intergroup Relations. The platoons within the experimental units will have better inter-group work relations than the platoons in the placebo and control units.
- H₄: Supervisory Consideration. The soldiers within the experimental units will have greater perceived supervisory consideration than soldiers within placebo and control units.

Moderating Variables

Because field research lacks the degree of control usually available in laboratory studies, the possible effects of moderating variables were included in this evaluation. The three possible moderating sources were: (1) leadership style of unit commanders, (2) the experienced psychological states of the soldiers, and (3) the higher order need strength of the soldiers.*

Leadership Style

A serendipitous advantage of the timing of this field research was that all of the officers in the division had

* Experienced psychological states and higher order need strength are two variables taken from the Hackman and Oldham Job Diagnostic Survey. An explanation of these terms is provided when each variable is discussed more fully.

previously been given a Leadership Opinion Questionnaire (LOQ) as part of a separate project. This fortunate event allowed the comparison of leadership styles of the commanders in the experimental, placebo, and control units. No a priori hypothesis was made about the effects of individual styles of leadership on the effects of survey feedback (waterfall pattern), since there was no means of control as to which treatment groups would have commanders with who scored high on initiation of structure or on consideration. Nevertheless, the data are available to make some inferences post hoc about the possible moderating effects of leadership style.

Experienced Psychological States

Hackman and Oldham (1974) introduce three psychological states which are viewed as moderating variables between the job dimensions and the individual's affective responses to work (e.g., satisfaction, motivation) and behavioral responses to work (e.g., performance quality, absenteeism). This author recognizes that the specific focus of survey feedback is not necessarily on changing the specific content of jobs (e.g., skill, variety, identity, significance, autonomy). But if the three psychological states (1) experienced meaningfulness of work, (2) experienced responsibility for work, and (3) knowledge of results, are not present in a job, they may moderate the effects of the survey feedback intervention. That is, if the very nature of the task (job dimensions) does not provide soldiers opportunities to experience these three

psychological states, then the participation in the survey feedback process may not have the positive outcomes expected.

Higher Order Need Strength

This research also examines the construct of higher order need strength for individuals. The concept is defined as the individual's desire to obtain growth satisfactions from work. Hackman and Oldham (1974) report that individuals differ in the degree to which they have a strong versus weak desire to obtain growth satisfactions from their jobs. Thus, it is theorized that individuals who score high on the pre-test measure will be more inclined to respond positively, i.e., with high satisfaction, to challenging jobs. Thus, one may conclude that higher order need strength will moderate the effects of a survey feedback intervention.

Additional Research Issues

In addition to the specific hypotheses listed above, there are several additional issues of interest in this study. These other issues will be discussed as ancillary measures without any a priori hypotheses. However, the reporting of these additional research issues is important because they add to a more complete understanding of the effects of these ancillary factors upon organizational efficiency.

Absenteeism

Hackman and Lawler (1971) found that absenteeism is, in part, contingent upon the level of human fulfillment which an individual derives from his work. That is, an inverse relationship exists, and one may expect that as levels of human fulfillment are increased, levels of absenteeism will decline. This research will investigate whether absenteeism declines in those units after they have participated in the survey feedback intervention.

Punishment

Archival data such as records of grievances and punishment have been reported by Jacobs (1970) to be related to measures of personal affect. An inverse relationship between dependent measures (i.e., general satisfaction, specific satisfaction, and internal work motivation) and the number of grievances and punishment would be expected. Clearly, the grievance procedures and the judicial punishment systems in this study are situation specific due to the unique controls and sanctions under which quasi closed military systems tend to operate. Unlike civil organizations which have the flexibility to allow workers to egress (quit), soldiers within the military are confined by specific time contracts. Therefore, the military leadership has no authority to "fire" or terminate a relationship. Thus, reprimands, fines, and corporal punishment are the vehicles of control exercised by those in authority.

Reenlistment

Reenlistment is another available measure correlated with the criterion measures of human fulfillment. One-third of the soldiers (grades E-1 to E-5) turnover annually on three-year enlistment options. The proportion of eligible soldiers who re-enlist for the same job can be considered an additional measure of satisfaction.*

Social Desirability

A thirty-three item social desirability response scale developed by Crowne and Marlowe (1964) was used to determine whether the respondents answered each survey as he honestly felt about each item. Evidence of socially desirable responses in self report instruments has been reported by Rosenberg (1969) from laboratory experiments. Although it is not clear how much evaluation apprehension occurs in field settings, Golembiewski & Munzenrider (1975) indicate that five to seven percent of the total variance in self report instruments could be explained by social desirability on the part of respondents. Therefore, it is plausible to assume that some

* Obviously, not all soldiers who re-enlist do so because of increased satisfaction with the job. Some re-enlist to change military occupational specialties; others to obtain a specific geographical unit of choice. These confounds have been eliminated. Also, the "rotational hump" found in seasonal adjustment (i.e., spring and summer enlistment periods are higher than fall and winter enlistments) have been considered and adjusted to determine an accurate base rate.

self report scores attributed to treatments may be biased with socially desirable responses.

Clinical Observations

One benefit which typically arises from doing research in a field setting is the opportunity to observe the processes of intervention and the impact they have on different individuals and units at the site. The lessons learned were many; some are discussed in this dissertation because of the additional insights they provide. Although these observations are intended to be objective, they must be viewed with some caution because they obviously reflect this author's perspective.

The writer's military association proved useful in coordinating the intervention activities in this setting. This author devoted considerable time to senior staff officers at the research site discussing what typical line (combat) units were suitable and willing to participate in this study. This procedure was important as the very nature of the Army's Organizational Effectiveness programs require that the client (unit) voluntarily seeks the assistance of an internal consultant in the negotiation, acceptance, and implementation of an intervention program. Given this constraint, a clear rationalization for careful selection of the units involved in this research becomes evident. That is, the nature of the research design dictates two conditions to be fixed, (1) the type of

intervention Survey Feedback, and (2) the pre-post test. Therefore, the only factors which can be considered random are the units and the subjects themselves. Since almost all of the units at this military site expressed a desire for an intervention, the task merely became one of selecting several homogeneous units which would be available to participate in the research during the general time frame desired. To elaborate further, there were numerous units available and generally agreeable to participate in the research. Some, however, had civilian employees; some were non-divisional or post support units. The more conventional tactical military units were also preparing for a major exercise and their availability to participate would have been at a later time. By eliminating the non-divisional* units as well as those involved with tactical priorities, the selection of the battalion was randomly made.

* The requirement that units participating in this study be from a Division was imposed for the following reason. By table of Organization and Equipment (TO&E) the division is the base unit from which the Army operates to fulfill its assigned mission. Whereas each division is "tailored" to accommodate specific tasks or mission requirements, the base structure, organization, and equipment are interchangeably similar. Non-divisional units are each, one of a kind. Because non-divisional units are created and recognized as unique entities, there is no plausible justification to assume that research findings at one unit could be generalized beyond that setting. Also, the selection of heterogeneous, non-divisional units would not have satisfied the rigor of homogeneity required of placebo and no treatment control units in this research design.

METHODOLOGY

The Experimental Setting

The research was conducted at one of the Army's ten division sized units located within the continental United States. A homogeneous battalion was selected from within the division to be used for the research. The battalion consisted of four company sized units with a total of approximately 450* officers and enlisted soldiers. Because of the author's pledge of anonymity for the participants, no specific units or commanders will be identified. The units selected in this study are engineer companies as opposed to infantry, artillery, or armor units. The engineer companies are combat engineers and are found within each of the Army's divisional units. Measures of efficiency for engineer units are detailed and specific. The engineers perform work projects (e.g., road building, bridge construction) which are measured by total manpower and equipment costs per project. Hence, an efficiency index can be formed to measure work quality, labor, and cost savings. In addition, many small engineer projects (e.g., painting signs, plumbing, electrical repair)

*The assigned strength was considerably higher than the 450 persons cited. However, several persons were subject to separation, temporary duty, school training, etc. and would not be present for both the pre and post surveys. Therefore, they were not included in the study.

enable the platoons to work as autonomous work teams physically removed from the company commander for extended time periods. Therefore, these engineer units appear ideally suited for this research design. The data in this study were an outgrowth of the Army's attempt to evaluate the success of Organization Effectiveness program's goal of using organization development based technologies to improve military unit effectiveness. As little empirical research had been done up to this time, this evaluation study was approved to determine whether a particular organizational effectiveness process, survey feedback, used by the Army's Organization Effectiveness Staff Officers was a useful process which could assist military units to achieve a greater level of operational effectiveness.

Pilot Research

As part of the overall research plan, the author conducted a pilot survey feedback program three months prior to the beginning of this study. In the pilot program, unlike in the actual research, the author functioned as both the internal consultant and the evaluation researcher. A similar military unit was given the pre-test survey, and extensive interviews were conducted with the soldiers in leadership positions as well as lower level enlisted members. The survey feedback served three functions. First, it provided an opportunity for the author to validate the survey instrument on a

representative sample of the military population. Second, the actual survey feedback sessions enabled the units to gain a better assessment of their organizational problems and to develop some action plans to eliminate the problem identified. Third, the pilot research provided the author with an appreciation of how commanders perceived survey feedback as an organization effectiveness intervention. The experiences gained from the pilot research enabled the author to forestall numerous problems in the actual research. Two misunderstandings deserve special comment here. Whereas Army internal consultants were given intensive training in organization development processual and leadership skills, the client commanders with whom these consultants work have little appreciation of the methods or objectives. Here it is important to underscore the misunderstanding that commanders assumed that all organization effectiveness activities could improve organization performance immediately following interventions. This serious misconception has contributed to a reticence on the part of some commanders to embrace the Army's Organization Effectiveness Program. Because all commanders are assigned to leadership positions for a specified period of time, some commanders adopt a short term orientation and expect organization effectiveness programs and activities to produce tangible results immediately. However, this short sighted perspective often leads to expectations which are too ambitious and the results fall short of the commander's anticipations. Then, by informal word of mouth with their associates, these commanders

describe their disillusionment with the organization effectiveness program because no dramatic changes in unit performance had taken place.

The second misunderstanding of some commanders is that the organization effectiveness process will somehow erode the commander's base of power and lessen his effectiveness as a leader. More specifically, greater participation and involvement by the work group members has been mistakenly believed to undercut the chain of command and weaken the structure of legitimate authority within the unit. These issues emanate from a lack of understanding of the goals and objectives of organizational effectiveness, and how internal consultants can serve as resource persons with knowledge and process skills which can lead to organizational improvement. The learnings and experiences obtained from the pilot research prompted the author to meet personally with the battalion commander and his executive officer as soon as the actual units involved in the research were identified. These meetings were designed to clarify what organization effectiveness programs could and could not reasonably be expected to accomplish. The concerns for productivity (performance) increases were raised by the commander, and clarified by the researcher. Also, an additional concern surfaced about anonymity. The specific concern was not so much who could be identified, but rather what specifically was the intended disposition of the findings to higher levels within the Army. Pointedly stated, the concern

was - what is actually being evaluated: the unit, the leadership, etc.? Care was taken to emphasize that the purpose of this research was to evaluate the organization effectiveness process - survey feedback - as a technology to determine whether the client units are, in fact, achieving a greater level of operational effectiveness as a result of this action research technique. The commander was informed that the purpose of the research was not to evaluate the individual unit commanders, the organizational climate, nor the role of the internal consultants. Once this stated objective was understood, apprehension about the research effort was apparently reduced. This conclusion is inferentially supported by the cooperative support and close working relationships which developed between the author, the battalion commander, and his staff throughout the conduct of the research.

The Research Design

The nature of the organization effectiveness programs conducted within the Army requires that the client (commander) voluntarily seeks the assistance of the internal consultant (IESO) in the negotiation, acceptance, and implementation of an intervention program. Because of this constraint, an experimental design in the orthodox sense of randomized selection of units was not feasible. However, as almost all of the organizations at the site of the research have expressed a willingness to use the resources of the internal consultants as soon as practical scheduling would permit, a quasi experimental design with a random selection from within the available organizations was adopted. The actual design is depicted below.

Two Experimental Treatment Conditions	Pre-Test	Manipulation	Post-Test
	Baseline Survey	Survey Feedback Intervention	Survey Feedback Measure
Placebo Treatment Condition	Baseline Survey	Race Relations, Drug & Alcohol Abuse Training	Survey Feedback Measure
No Treatment Control Condition	Baseline Survey	No Treatment	Survey Feedback Measure

Figure 3
Research Design

Controls for Sources of Invalidity

Before discussing the actual intervention and evaluation activities, it is important to discuss fully the rationale for this particular design. The language of Campbell & Stanley (1966) and Cook & Campbell (1976) will be used to address factors which could jeopardize the internal and external validity of the research. Whereas, the use of orthodox randomization from a universe of possible Army organizations would have provided an appropriate safeguard against threats to internal validity, practical limitations dictated that one research site be identified where local conditions correspond with those considered most typical for Army units and therefore, from which inferences could be made. Thus, finding a site which was generally typical of an Army organization and one which was available to participate within a reasonable time frame were two practical constraints.

Assignment to each of these conditions was random; thus, biases which could have resulted from differential selection of units for the comparison groups was minimized. The author supervised the administration of both the pre and post tests. With the exception of six questions which were added as a manipulation check to the post-test in the two experimental groups, the pre-post survey instruments were identical. Thus, concern for possible biases due to instrumentation was removed. Although all four of the units were part of the same homogeneous battalion, the concern for the artifact of statistical

regression was not eliminated until an analysis of the pre-test group indicated that there were no extreme polar scores among the comparison conditions, that is, there were no units whose scores were universally higher or unusually lower than the overall scores.

The factor of history which could have jeopardized the internal validity of the results, was anticipated and avoided. More specifically, after the pre-test and manipulations had occurred some of the units were tasked to provide a special summer training support, that is to perform unusual duties. These activities are quite different from the daily work responsibilities which the groups performed during the other nine months of the year. Therefore, the post-test was administered prior to the units' involvement in summer support. Failure to have done so would have created some confounds on the job dimensions and job satisfaction composites used as dependent variables. Although individual identifiers were used to analyze pre and post test responses, subject mortality was still a problem in this research. The lack of additional unit resources precluded the availability of a post test only group to deal with possible confounding of results due to testing itself. However, the Crowne-Marlowe social desirability scale used in both the pre and post tests could serve in part as a check on the effects of testing. That is, if the respondents were honestly answering both surveys, the level of social desirability in their responses would be about the same level

on each occasion. It would also be difficult to assume an effect due to testing since some of the items were reverse scored and the respondent would have to try to remember how he answered each item or group of items in the pre-test. Analyses of the data however cannot totally disconfirm the possibility of an effect attributable to testing.

Although it is possible, only in theory, to draw upon sample groups who represent the exact population universe, there were some major concerns of confounding data interpretation which had to be controlled irrespective of which Army organizations were involved. Specifically, in this type of evaluation assessment, where participants could perceive career enhancing opportunities based on reporting successful results, the participants could tend to minimize their reports of "failure" of the intervention program. The external validity concern is for reactive arrangements; that is, the voluntary nature of the intervention may produce a reactive effect similar to the Hawthorne Effect. Soldiers perceive that significant others take a new interest in them, and ergo, these soldiers become more motivated and improve efficiency on task related functions. Finally, improvements could be interpreted as the result of the survey feedback intervention when it would actually be the placebo effect of a new concern or interest in the respondents.

A cellular diagram of the research design is given at Figure 4. It is a 4 x 4 x 2 repeated measures design with double

nesting of subjects identified here as (factor C) in platoons denoted as (factor B) which are, in turn, nested in treatment conditions identified as (factor A). The repeated measures constitute the fourth factor, D. For purposes of analysis, a Cornfield-Tukey algorithm was computed to derive the expected values of the mean squares which would yield appropriate denominator terms to test each main effect (factors A,B,C, D) separately as well as the interaction effects predicted. Despite these careful plans, there were no standard computer programs which had the capability of partialling the effects of nesting, repeated measures and unequal cells. Thus, for analysis purposes, a series of factorial design univariate analyses of variance were employed in order to obtain pooled estimates of residual terms of platoon work groups to test each particular criterion variable. A more complete discussion of the statistical analyses will follow in the data analysis section.

	Pre-Test	Post Test
Experimental Treatment One	Platoon 1 Subjects = 20	Subjects = 20
	Platoon 2 Subjects = 25	Subjects = 25
	Platoon 3 Subjects = 18	Subjects = 18
	Platoon 4 Subjects = 3	Subjects = 3
Experimental Treatment Two	Platoon 1 Subjects = 15	Subjects = 15
	Platoon 2 Subjects = 22	Subjects = 22
	Platoon 3 Subjects = 10	Subjects = 10
	Platoon 4 Subjects = 5	Subjects = 5
Placebo Treatment	Platoon 1 Subjects = 20	Subjects = 20
	Platoon 2 Subjects = 28	Subjects = 28
	Platoon 3 Subjects = 32	Subjects = 32
	Platoon 4 Subjects = 10	Subjects = 10
No Treatment Control	Platoon 1 Subjects = 18	Subjects = 18
	Platoon 2 Subjects = 22	Subjects = 22
	Platoon 3 Subjects = 20	Subjects = 20
	Platoon 4 Subjects = 16	Subjects = 16

Figure 4

Experimental Paradigm - Cellular

The Action Research Manipulations

Approximately three weeks before the survey feedback intervention, the author administered a pre-test survey to all units involved in the evaluation study. The surveys were administered to company-size units, and each group received the same briefing and pre-test items. The participants were informed that they were part of an Army-wide survey to determine how soldiers felt about their work. The purpose of the survey, as it was explained, was to allow the U.S. Army Administration Center to collect data to meet research, evaluation, and training requirements under its assigned mission. A complete briefing statement can be found on page one of the survey: See Appendix A.

Three weeks following that survey, two internal consultants - graduates of the Army's Organization Effectiveness Training Center - arrived in the battalion and spent the following five weeks as resource persons. A number of activities were accomplished which were not a part of this study such as: a battalion staff management development seminar, battalion staff team building, and the administration of a management development survey to the battalion staff. In addition, each company (unit) within the battalion was given the Army's General Organizational Questionnaire (GOQ) which served as the instrument for the survey feedback activities. A copy of the GOQ adapted by the Army is listed as Appendix C. The data were collected and analyzed, and feedback meetings were held in a

strict waterfall pattern. The data were summarized on computer printout sheets by company, by platoon, and by squad. Thus, each work group level received a histogram which depicted that group's responses to the survey. Then, one internal consultant worked with each of the two company size units which participated in the survey feedback intervention. However, at times, the consultants jointly worked with each other throughout the intervention. For example, prior to the first feedback session, the two internal consultants conducted three, two-hour training sessions to prepare the company commanders and the first sergeants on how to conduct survey feedback sessions. A number of process issues were reportedly dealt with in these training meetings. First, the internal consultants provided an overview of how to interpret the data. Second, the commanders and first sergeants received an orientation about how to seek ownership of the data and to encourage an open climate to allow problems identified to be discussed. Finally, the commanders were informed that action plans which were to ensue from the feedback meetings, required their support and commitment in order for the process to be effective. There were some reported misgivings about the risks of sharing power. This seemed most apparent on the part of company first sergeants who had been socialized for twenty years in a more traditional autocratic form of leadership.

By design, the waterfall down pattern of the feedback was to be strictly followed. That is, feedback sessions were to begin with the top leaders in each of the two companies and

continue down to subordinate levels in each unit. The initial feedback meeting consisted of: the company commander, the first sergeant, and the four platoon leaders. The feedback meeting addressed company issues or some platoon issues which had ramifications on the company as a whole. Each company commander conducted the feedback session with the presence of an internal consultant who was present to legitimize the equal participation of the other members.* Several company level meetings followed without an internal consultant. The schedule was to have the platoon leaders begin their feedback sessions once problems were acknowledged and action plans formulated at the company level. The platoon feedback sessions were to begin with the platoon leader, platoon sergeant and the four squad leaders present for the first feedback. Once the data were clarified to this group, the entire forty member platoon would meet to continue the process. The platoon problems were identified and some action planning at platoon level had begun; then squad level meetings of each ten member squad was to be scheduled. Thus, the plan called for a strict waterfall down mode. Squad level meetings would not occur until platoon level meetings had been held. The rationale for this strict adherence was quite practical. Since support and commitment had to be sanctioned from above, the larger, more

* It was not possible to assess how genuine the participation was for these feedback sessions. There is a systemic con- found that the company commander must evaluate each of the platoon leaders annually. One poor evaluation in the military, unlike the evaluations of other organizations, would effectively end a potential career. Both subordinates and supervisors knew and accepted this as given.

pervasive problems were to be considered first. Second, the higher level feedback sessions were to serve as important role models for the lower groups to emulate. However, two trade-offs were made in this decision. First, to follow a strict waterfall down pattern consumed a great deal of time. Thus, some squads did not have action plans developed by the post test schedule. Second, many relatively simple problems unique to the squad level were not resolved until the larger issues at company and platoon level were completed. Guidelines were established for action plans to be separated into those which could be resolved immediately and those which required more time. However, each meeting actually decided what specific issues it desired to address. The author's post-test was given approximately three weeks after the internal consultants left the organization. As noted earlier, part of the rationale for the timing of the post test was to avoid any contaminant of the summer support* activities on the perceptions of the soldiers.

* In essence, this summer support consisted of details - routine work which was often unpleasant. Additionally, soldiers may or may not have worked together in their own squads or platoons.

The Placebo Manipulations

Race relations, and drug and alcohol abuse training was conducted as a placebo intervention in one of the four companies within the battalion. Here, like the experimental manipulation, an outsider, an officer trained and appointed as the Race Relations, Drug and Alcohol Abuse Officer conducted seminars on these topics within the placebo company. The training occurred during the same time that the experimental manipulations occurred in the adjacent companies. Soldiers were divided into platoon size groups and seminars were conducted by the officer in charge. Following the seminars, "rap sessions" were held, where soldiers openly discussed issues of race relations or drugs. Thus, the appearance of a true intervention was carried out in this placebo setting.* The theme in the seminars and rap sessions was oriented toward the Army's position on these issues. No attempt was made to

*The author spent some time with a member of an Army agency which has responsibility for doctrine and training in race relations, drug and alcohol abuse. According to the agency representative, sensitive, emotional issues could arise in rap sessions dealing with drug or race problems. Fearing an experimentally induced artifact, the author requested that the race relations sessions deal with the Army's stand on these problems. The author feared that if true, open, emotional conflict arose in the rap sessions and was not effectively handled, then the individual perceptions measured in the post test might reflect the intensity of these discussions.

discover and exploit potential racial problems during this time frame. (No racial incidents were reported to higher headquarters in the required reports during this period.)

The No Treatment Control Condition

Whereas Cook and Campbell (1976) suggest that no treatment control groups generally develop into resentment treatment groups of compensatory rivalry groups, neither situation seems plausible in this survey. As with the experimental and placebo units, the no treatment control unit was given the pre-test survey. Unlike the other two conditions, no intervention nor training was conducted. Rather, this company was attached to the battalion and was selected by the battalion commander to perform some work divorced from other units of the battalion. Thus, by physical separation, this unit received only the pre-test and post-test, and the members of this no treatment control group were believed to be unaware of the intervention with training activities within the other companies in the battalion. Therefore, it is reasonable to assume that there was no resentment contaminant operating within the unit or was there likely to be any compensatory rivalry. That is, by being physically removed, there were no conditions of social competition operating to motivate this group to a rivalrous effort. Whereas, the soldiers were not completely oblivious to the presence of the external persons, the author's interviews with the company commander and first sergeant indicated that they perceived these external persons as

working only with the battalion staff. They did not believe their unit was part of any comparison with other units in the battalion.

Survey Instruments and Constructs Measured

Survey Variables

In this study, three surveys were conducted (see Appendices A, B, and C for the complete survey instruments). At each administration a full sampling of all the personnel present for duty was sought. (Again, this strength figure is less than the actual assigned strength which included soldiers leaving the Army within forty-five days, soldiers on temporary duty, those in military and civil schooling programs, those on leave, sick call, and in the stockade in confinement). Participation was voluntary, and in compliance with public statutes governing privacy, a privacy act statement was read prior to the administration of each survey. At that time, persons who declined to participate were allowed to leave or to remain with their work groups and hand in blank answer sheets. Several persons elected not to complete a survey, and they chose to remain with their work groups until the end to protect anonymity. A few others chose to "play games." That is, they had no serious interest in the surveys and provided unreasonable responses on their answer sheets (i.e., these persons marked all responses as one or ten. This pattern is irrational since reverse scoring was used as a manipulation check on almost half of the questions. The

administration of the surveys was strongly supported by the leaders in authority. For example, the battalion commander and his executive officer both talked to each of the subordinate company commanders to ensure that there was maximum support for each survey. This high level support was crucial to the success of the survey, since work projects were delayed or rescheduled to ensure that all of the present for duty soldiers were on hand at a predetermined time.

Conveniently for the author, the pre-test was administered in company size groups. One company was scheduled in the morning and one in the afternoon for two successive days. A third day was set aside for any persons missed in the earlier scheduled sessions. Each company size unit was surveyed in the mess facility, and a copy of the survey was given to each person whether they wished to complete it or not. Thus, no subject mortality occurred in the pre-test as a result of job related conflicts. Those few soldiers not willing to participate, remained with their work group members, and returned blank answer sheets at the end. This procedure guaranteed anonymity of the non-participants.

A similar procedure was followed in the post-test schedule. Again the units surveyed were company size but the location in May was changed to the theater which was air conditioned with more room available. For the pre-test, 408 soldiers were present to take the survey. There were 12 persons from the four companies who refused to participate, nine others provided unreasonable responses (i.e., all ones or all tens)

and four had uninterpretable answers (i.e., only 70 responses were completed on the first answer sheet, and 45 responses on the second answer sheet. These persons had 100 responses on answer sheet one and another 45 on answer sheet two). Therefore, 383 responses were scored in the pre-test. Finally, 96 soldiers had taken the pre-test but did not have matching identification codes for a post-test. Thus, 267 pre-survey responses were used in the actual data analysis.

In the post-test, 337 soldiers were present. Twenty-three were eliminated because of blank, unreasonable, or uninterpretable answer sheets. Therefore, 314 surveys were scored in the post-test. By comparing the four digit identification code known only by each respondent, there were 27 soldiers who took only the post-test. Thus, there were 287 soldiers who took both the pre-test and the post-test. A complete summary of the soldiers who took the pre-test and, or the post-test is listed at Table One. Whereas, the total number of soldiers taking the pre-test (N= 408) and post-test (N= 337) differed, this change can be attributed to the total present for duty strength of the units at time one and time two. Thus, by comparing the unit morning report (strength accounting document) with the present for survey total, 85 percent of the four companies available within the battalion took the pre-test and 87 percent of the four companies available within the battalion took the post-test.

For all of the variables to be discussed next, a comparison of the pre and post survey items is provided in Appendix D.

In addition, the average internal consistency reliability across both survey administrations is reported when

TABLE 1
Summary of Soldiers Taking Pre-Test and Post-Test

Pre-Test	Post Test
408 N <u>(25)</u> Omitted 383 Valid Pre-Test <u>(96)</u> Took Pre-Test Only 287 Total	377 N <u>(23)</u> Omitted 314 Valid Post Test <u>(27)</u> Took Post Test Only 287 Total
12 Blank 9 Unreasonable <u>4</u> Uninterpretable 25 Omitted	8 Blank 9 Unreasonable <u>6</u> Uninterpretable 23 Omitted

applicable. Other constructs are measured and reported in a time series comparison.

The pre-test survey consisted of 115 items which were divided into nine sections. The post-test was a replication of the pre-test; however, seven additional questions were added at the end of the post-test. These seven items were intended to serve as manipulation checks on the survey feedback intervention. With the exceptions of the social desirability scale (section eight), the demographic items (section nine), and the post-test manipulation checks (section ten), all of the data in the pre and post-test surveys are expressed in terms of

indices. Each index is composed of a specific group of questions which have been designed to measure a particular construct. Typically, three items were used to ask the same question, and at least one of the items was reverse scored to insure that valid responses were given for each construct being measured.

The survey variables measured in both the pre and post tests are given by index below. (The reader may refer to Appendix D for a more detailed description of each item which made up the indices).

Job Dimensions. The self report measures taken of job dimensions were modeled from the Job Diagnostic Survey developed by Hackman and Oldham (1974). The job dimensions measured were: skill variety, task identity, task significance, autonomy, and feedback from the job itself. These five dimensions were developed into seven point Likert type items using the following response classification:

1. Very Inaccurate
2. Mostly Inaccurate
3. Slightly Inaccurate
4. Uncertain
5. Slightly Accurate
6. Mostly Accurate
7. Very Accurate

These items were included in section one of the pre and post-test questionnaires. The soldiers were asked whether each statement was an accurate or inaccurate description of

their jobs.

Survey feedback has not been reported in previous research to result in altered job content. However, it may be reasonably argued that when the intent is to predict soldiers' affective responses to work, soldiers' own ratings of the characteristics of their jobs should be used. It is agreed that the soldier's own perceptions of the objective characteristics of his job is causes to his affective reactions to it. The internal consistency reliability of the job dimensions composite across both survey administrations was .74.*

Experienced Psychological States. Measures of the psychological impact of the job on the soldiers is based on the research reported by Turner and Lawrence (1965), Hackman and Lawler (1971), and Hackman and Oldham (1974). Their findings suggest that three different psychological states are created by different characteristics of jobs. First, experienced meaningfulness of work is enhanced by the job dimensions skill variety, task identity, and task significance. Second, experienced responsibility for work outcomes is increased when a job has a high degree of autonomy. Third, knowledge

* All internal consistency reliability coefficients were computed using Cronbach's Alpha (Cronbach, 1951) and are based on the number of soldiers who responded to all items in a composite. Because the Reliabilities program used assumes any missing value to be 99999, any given composite was not computed for a soldier who failed to respond to all items in the composite.

of results is increased when a job is high on feedback. The theory underlying previous research has proposed that positive personal and work outcomes (i.e., high internal motivation, high work satisfaction, high quality performance, and low absenteeism and turnover) are obtained when the three psychological states are present. The average internal consistency reliability across both surveys was .81.

Affective Responses to the Job. The term "affective responses" is used here to describe three composite indices of soldier reactions to their jobs. The components are: (1) general satisfaction, (2) specific satisfaction, and (3) internal work motivation.

Previous research by Hackman and Lawler (1971), and Frohman, Weisbord, and Johnson (1971) found that general satisfaction has been shown to predict both absenteeism and turnover. The average internal consistency reliability was .75.

The specific satisfaction composite index is reported by Hackman and Oldham (1974) to relate positively to the general satisfaction measure. In addition, Hackman and Oldham (1974) suggest that specific satisfaction with higher growth needs relates most strongly to the characteristics of jobs themselves. The internal consistency reliability across time one and time two was .88.

The composite, internal work motivations, is defined by Hackman and Oldham (1974) as the degree to which the employee

is self motivated to perform effectively on the job. Thus, it is a composite measure of the quality of the soldier's work. The average internal consistency reliability was .82.

Higher Order Growth Need Strength. A composite of five items were adapted from Hackman and Oldham (1974) to measure the level of opportunity soldiers "would like" to have to satisfy higher order needs through their work. The underlying theory suggests that there are individual differences among soldiers. Individuals who score high on the pre-test measure should respond positively (i.e., with high satisfaction and internal work motivation) to challenging jobs; individuals who score low on the pre-test tend not to find such jobs satisfying or motivating (Hackman and Oldham, 1974). The average internal consistency reliability for the higher order need strength index across the two administrations was .87.

Intergroup Relations. There were four items used to measure the quality of intergroup relations within each company. The internal consistency reliability for the two surveys was .69.

Supervisory Consideration. The term "supervisory consideration" is used here to determine the degree to which the immediate supervisor provides support and interest in the soldier's problems. Four items were asked twice: "how it is now", "how I would like it to be." The average internal consistency reliability for both surveys was .66 for the "how it is now" measure. The average internal consistency reliability

for the "would like it to be" composite for both surveys was .73.

Measures of Effectiveness

There were four measures of unit effectiveness used in this study: (1) absenteeism, (2) grievances and punishment, (3) reenlistment, and (4) project manhour/cost efficiency.

Absenteeism. The term absenteeism is used here to include only those absences without authority (AWOL). Categories such as sick leave, convalescent leave, funeral leave, etc. are not recorded separately. Absenteeism was measured by the use of archival records. Historical data were collected for each unit twelve months prior to the pre-test and continuing up three months beyond the post-test. Thus, the data covered a time series comparison from January, 1976 through August, 1977.

Grievances and Punishment. Originally, the author's intent was to compare the total number of grievances (e.g., Inspector General Complaints; Congressional, Vice Presidential, and Presidential inquiries; and chaplains' calls). However, the recorded data regarding some inquiries is considered confidential. Another problem encountered was that there was no way of determining if the same individual had used one or more of the grievance procedures on the same complaint or even if the complaint was filed one or more times. Therefore, only data about punishment were collected and these data cover the

same time period as did absenteeism.

Reenlistment. Examining the untested theory that "a happy soldier will stay in the Army," records of reenlistment were examined for the period six months prior to the intervention and three months after the post-test. The assumption being investigated is whether soldiers, in the experimental treatments, who are more satisfied with their jobs are more inclined to reenlist for these same jobs when their enlistment contracts expire.

Efficiency. The term efficiency is used as a measure of the performance of the units. Data were collected for each unit in a time series, three months prior to this research through three months after the post test. The data collected were the total number of projects each engineer unit had completed. A standardized measure of performance efficiency was determined based upon the type of project, the amount of man-hours expended, total construction time, and the total costs of construction equipment.* The total number of projects completed was not the criterion selected to measure efficiency. Rather, manhours per project were used as an efficiency index. The rationale for this decision is that there is no incentive for a unit to complete a fixed number of projects. The total amount of projects available is continuous, and the units

* In addition, factors such as weather, manhours available, equipment density, and inflation of material costs were taken into consideration.

would merely by accepting more and more projects from almost a limitless pool of ongoing requirements. Therefore, this researcher chose to examine, over time, not how many projects were completed but rather how much more efficient the units are in accomplishing the same type of project as a result of the intervention.

Moderating Variables

A discussion of two of the three moderating variables, (1) psychological states, and (2) higher order need strength, was presented in the survey variables portion of this section. The third moderating variable examined was leadership style.

Leadership Style. As previously mentioned, this writer had the good fortune to have access to the results of the Leadership Opinion Survey which was given prior to this evaluation. The effects of leadership style of each unit commander on intervention effectiveness is examined in the results section.

Other measures

Two additional sets of measures were taken in this study. The first was a measure of the social desirability of the responses given in self report surveys. The second was a series of manipulation checks about the perceived effectiveness of the intervention. The second set of measures was given only to the experimental and placebo units in the post-test.

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Social Desirability. A 33 item scale developed by Crowne and Marlowe (1964) was used to determine if the respondent was answering each survey item as he honestly felt or as he thought he ought to respond to please the researcher. Internal consistency for this measure has been reported at .88 using the Kuder Richardson test (Blalock & Blalock, (1968). The items used in the pre and post-test are found in section eight of the surveys.

Intervention Manipulation Checks. On the post-test, seven items were added as manipulation checks on the independent variable type of treatment. Using a forced choice format, (1) yes, (2) no, or (3) do not know, the respondents answered seven questions which dealt with activities within their work group over the previous three month period. The items used in the post-test for the placebo and experimental units are found in section ten of the post-test.

Analysis Procedures

Because there are several criterion measures used in this study, multivariate analysis of variance (MANOVA) would appear to be an appropriate statistical tool for data analysis. MANOVA is a multivariate technique which analyzes the effect of the treatment on all criteria simultaneously. Thus, the simultaneous response of the treatment units to all variables, considered as a single test, generally contains more information about the total effect of the independent variable,

than does the series of univariate tests considered singly (Winer, 1971).

However, MANOVA was not used as the principal data analysis technique because the following basic assumptions of multivariate analysis could not be met. First, multivariate analysis operations typically involve linear combinations of variables. This means that the linear correlation between the dependent measures is considered to be homogeneous (constant) across all cells in the paradigm. This strict assumption cannot be met in this research since true randomization from a universe of all military units was not sought.

A second reason for not choosing to use MANOVA is the problem of missing or incomplete data. Of fundamental importance in many multivariate analysis techniques is the general problem of the estimation of missing elements in a data matrix (Horst, 1966). In this research design, the criterion submatrix would be fragmented. That is, data available for some composite scales would be based only on incomplete responses to each index of criterion measures. The effect of this situation would mean that an adequate solution of some of the most important multivariate problems would not be provided with a matrix of incomplete data. A singular matrix could result.

A third reason for not employing MANOVA procedure is the inability of this double nested, repeated measures design with unequal cell frequencies to evaluate all tests of significance. As was stated earlier, a Cornfield-Tukey algorithm

was used prior to data collection to determine which specific hypotheses could be formulated and tested. Figure 5 shows a summary of the model and it identifies the hierarchial interactions for which conventional F ratios can be used to test significance. Theoretically, where variability is caused more by joint action of factors than their simple additive effects, as in the case here, interpretation of MANOVA is a difficult process (Digman, 1966). Finally, the use of MANOVA assumes an interdependency of all of the dependent variables. Table 2 illustrates a Pearson correlation matrix of the self report dependent variables which are used in this research. Of the eight principal variables analyzed, all except higher order need strength appear to be strongly related ($p \leq .01$). Although the table seems to support the use of MANOVA, the author would disagree in this instance because of the problem of multi-collinearity which exists. That is, not only is there a high degree of intercorrelation among the dependent measures, but there is also the problem of measuring different constructs with the same criterion levels (e.g., general and specific satisfaction, job dimensions, and experienced psychological states). In view of the problems enumerated above, multivariate techniques were not considered appropriate in this data analysis.

The specific techniques used in the data analysis were dictated by the design of this research and the aforementioned comments on multivariate testing. As mentioned earlier, the

$$\begin{aligned} \text{MODEL}^* \quad X_{ijkl} = & \mu + \alpha_i + \beta_j(i) + \pi_k(ij) + \delta_l + \alpha\delta_{il} \\ & + \beta\delta_{j(i)L} + \beta\delta_{k(ij)l} + \epsilon_{m(ijkl)} \end{aligned}$$

Testable Effects

$F_A = \frac{\text{MS treatment}}{\text{MS pooled units w/in treat}}$	(Treatment effects)
$F_B = \frac{\text{MS units}}{\text{MS subjects w/in units w/in treat}}$	(Test effects of units within treatments)
$F_C = \frac{\text{MS subjects}}{\text{MS w/in treatments (pooled error)}}$	(Test effects of subjects w/in units w/in treatments)
$F_D = \frac{\text{MS repeated}}{\text{MS}_{AD}}$	(Test effects of repeated measures)
$F_{AD} = \frac{\text{MS}_{AD}}{\text{MS}_{BD}}$	(Interaction of treatment and repeated measures)
$F_{BD} = \frac{\text{MS}_{BD}}{\text{MS}_{CD}}$	(Interaction of unit w/in treatment and repeated measures)
$F_{CD} = \frac{\text{MS}_{CD}}{\text{MS w/in treatments (pooled residual error)}}$	(Interaction of subjects w/in units w/in treats and repeated measures)
$F_{AC}, F_{BC}, F_{ACD}, F_{ABC}, F_{ABD}, F_{BCD}, F_{ABCD}$	These F ratios are untestable subscripts
	$\alpha\delta_{ik(ij)l}, \beta\delta_{jk(ij)l}, \alpha\beta\delta_{ijk(ij)l}$ all drop from the model

* Key
 α = Factor A treatment
 β = Factor B unit
 π = Factor C subjects
 δ = Factor D repeated measures

Figure 5

F Ratios Derived from Cornfield-Tukey Algorithm

TABLE 2
Intercorrelation Matrix of the Self Report Criterion Measures

VARIABLES	1	2	3	4	5	6	7	8
1. Job Dimensions		.66* .001**	.55 .001	.55 .001	.05 .21	.29 .001	.37 .001	.34 .001
2. Psychological States			.71 .001	.67 .001	-.001 .49	.43 .001	.39 .001	.35 .001
3. General Satisfaction				.73 .001	-.006 .45	.47 .001	.40 .001	.29 .001
4. Specific Satisfaction					-.09 .06	.53 .001	.51 .001	.31 .001
5. Higher Order Need Strength						-.06 .16	-.06 .16	.28 .001
6. Group Relations							.43 .001	.31 .001
7. Supervisory Consideration								.44 .001
8. Supervisory Consideration (as would like it to be)								

* Correlation

** Significance level

design contained double nesting, repeated measures, with unequal cell frequencies. In order to test the specific hypotheses formulated, the author used a series of repeated measures tests for each platoon size group across the four treatment conditions to obtain a pooled estimate of the sums of squares for the subjects nested within platoons within treatments.

Figures 6 and 7 show a schematic representation of the analysis procedures used. The sums of squares derived from the mean values of the pre and post surveys yield a between people variance estimate for each of the sixteen platoons which was pooled to formulate factor C (subjects within units within treatments used in the second phase of data analysis).

The residual variation estimates obtained in phase one for each of the platoons was used to provide a pooled estimate of the sums of squares residual which when divided by the degree of freedom yield the mean square within treatment or error estimate for the analysis in phase two. The error estimates of phase one used as pooled estimates in phase two are also shown in Figure 6.

Finally, consideration was given to conduct and report a series of tests for homogeneity of variance prior to the pooling of the error estimates for between people and within people variation. But this writer decided not to do so. There is no need for a high degree of sensitivity in such tests, because F tests used in the analysis are robust with respect

Partition of Total Variation (By Platoon)

Pre	Post
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
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16	16
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86	86
87	87
88	88
89	89
90	90
91	91
92	92
93	93
94	94
95	95
96	96
97	97
98	98
99	99
100	100

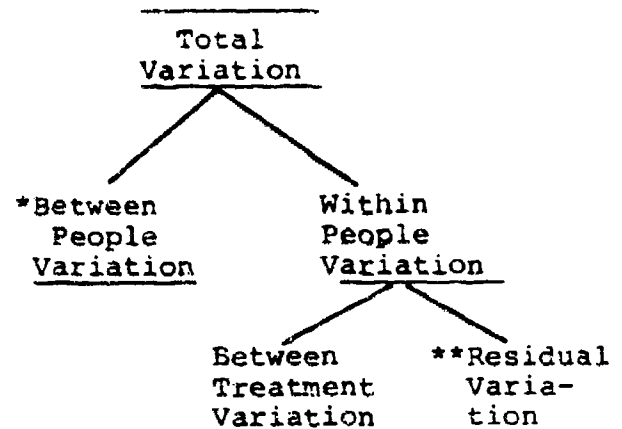
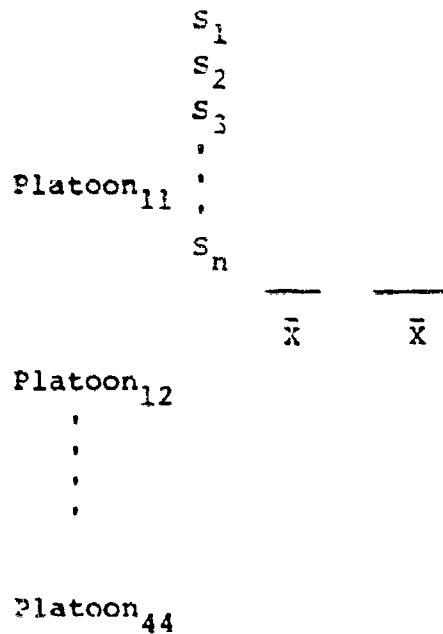


Figure 6

Single Factor Repeated Measures ANOVA
for Each of the Sixteen Platoons:
Phase One

- * There were 16 separate between people sums of squares estimates from which four pooled estimates of subjects within treatments were derived.
- ** There were 16 separate residual variation sums of squares estimates from which four pooled estimates of repeated measures by subjects within units within treatments were derived.

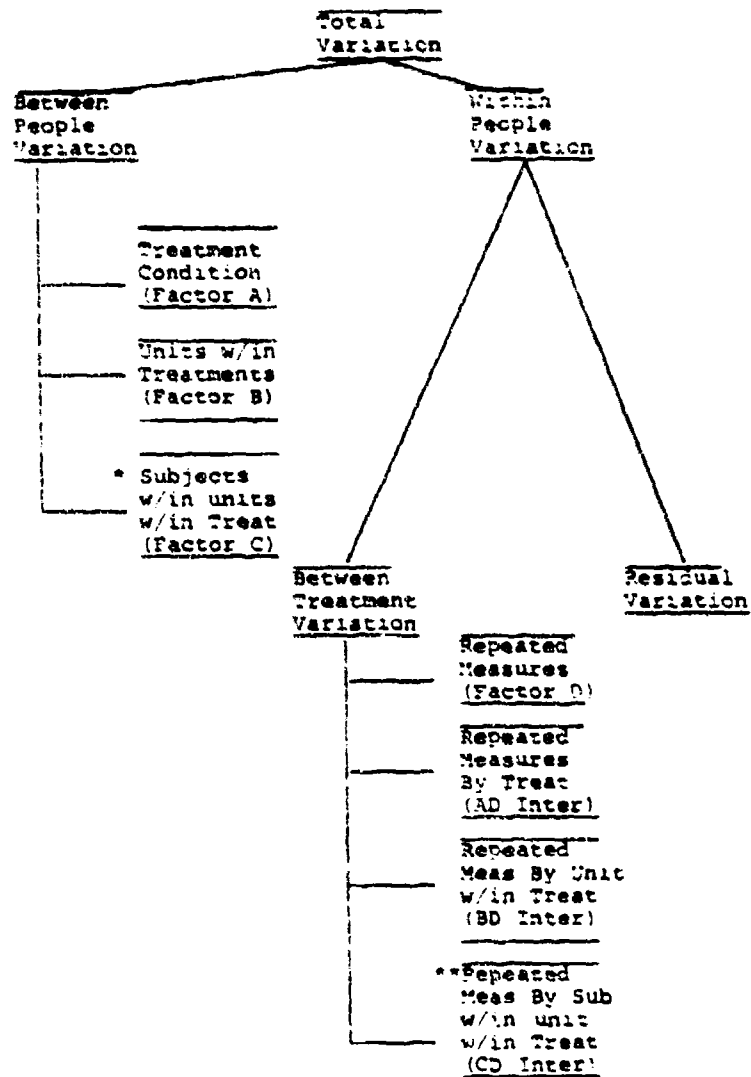


Figure 7

Hierarchical Repeated Measures ANOVA
for Each Dependent Variable:
Phase Two

- *Pooled estimates taken from Phase One between people variation make up Factor C.
- ** Pooled estimates taken from Phase One Residual Variation make up Factor CD

to departures from homogeneity of variance (Winer, 1971). The work of Box (1954) also supports this claim. Preliminary tests of homogeneity of variance and normality of distributions are not of primary importance with respect to Type 1 error. That is, the F test is robust, and Type 1 error is not seriously affected when population distributions deviate from normality and homogeneity of variance. Before reporting the analyses in the results section, it should be stated again that this research took place at one military site. Because the soldiers sampled in this study were not a random sample drawn from a universe of all soldiers in over 300 military occupational specialties, the results of the tests of significance should be generalized to other populations only with caution. Finally, because the number of soldiers studied was quite large, a small difference on the self report measures could likely be statistically significant. However, all significant differences may not have practical significance to commanders. For example, a difference of say $\sim .30$ in specific satisfaction measures may be statistically significant, but the resources and commitment required on the part of the command to alter this attitudinal response may not be practically significant. It is for this reason that the archival, objective, open data included in this study are considered vital to a meaningful interpretation of the effects of the intervention.

RESULTS

In the results section which follows, the outcomes of the planned intervention are discussed. This section is divided into three parts. In the first portion, the preliminary overall analyses are given. The second portion reports the tests of the research hypotheses, and in the third portion, tests of other research questions are presented.

Preliminary Analyses

The first analysis presented is a comparison of each of the survey variables for each time period and over the course of the study. Table 3 presents the means, the standard deviations, and the directional changes in means of the survey variables over time. Inspection of the data contained in Table 3 seems to indicate that modest improvement took place in soldiers' specific satisfactions, intergroup relations, and in the amount of supervisory consideration given to soldiers by their immediate supervisors (e.g., squad leaders, platoon sergeants, platoon leaders). However, based on these data one cannot offer any specific inferences. The reason that no inferences can be made thus far is easily explained. The data in Table 3 constitute an average of the means for all units under all treatment conditions. Hence, data about which units are more satisfied requires further analysis.

TABLE 3

Means, Standard Deviations, and Directional Change of Survey Variables for All Subjects Over Time

SURVEY VARIABLE***	PRE-TEST	POST-TEST	Directional Change of \bar{x}
1) Job Dimensions	4.178* (.964)**	4.128 (.893)	-.050
2) Psychological States	4.191 (1.026)	4.167 (.936)	-.03
3) General Satisfaction	4.251 (.999)	4.183 (.925)	-.068
4) Specific atisfaction	3.870 (1.092)	3.961 (1.159)	+.091
5) Higher Order Need	7.849 (1.652)	7.855 (1.637)	+.016
6) Intergroup Relations	4.098 (1.165)	4.155 (1.145)	+.057
7) Supervisory Consideration (Now)	3.912 (1.296)	3.935 (1.154)	+.023
8) Supervisory Consideration (Wanted)	4.768 (1.341)	4.578 (1.208)	-.190

* The first figure reported is the mean score for each variable

** The second figure reported is the standard deviation for each variable.

*** The survey variable scales consisted of a range 1 through 7, except Higher Order Need which ranged from 4 through 10.

Table 4 provides a more meaningful array of the means of the survey variables, because the data are analyzed separately by the two experimental conditions, the placebo condition, and the no treatment control condition. An inspection of these data reveal that although general improvement took place in soldiers' specific satisfactions, the soldiers within the two experimental units reported the strongest improvements in this measure. The data about intergroup relations show that there are positive improvements in two of the four treatment conditions. Finally, with the exceptions of (1) the Higher Order Need Strength, and (2) Supervisory Consideration (Wanted) variables, the largest changes between the pre-test and post-test variables occurs in the experimental treatment conditions. This is important to the continued analysis of the data. By design, change was to occur in the experimental treatment conditions, and little change was to be expected in the placebo and control treatment conditions between time one and time two. However, the large changes in the Higher Order Need variable and the Supervisory Consideration (Wanted) variable are not alarming at this point of the analysis. For each of these dependent variables, larger increases from time one to time two can be interpreted as no improvement. More specifically, as a soldier's need to attain more challenging work is satisfied, his demand for that need as measured by the post-test should decline over time and result in a lower post-test score. This was the case in both experimental treatment conditions; experimental treatment condition one

TABLE 4
Means, Standard Deviations, and Directional Change of
Survey Variables Broken Down by Each Treatment Condition

SURVEY VARIABLE	TREATMENT	PRE-TEST	POST-TEST	Directional Change of \bar{x}
1) Job Dimensions	Experimental	4.3002 * (1.0414)**	4.1598 (.8752)	-.140
	Experimental	4.4574 (.7403)	4.2234 (.7604)	-.234
	Placebo	3.9812 (.9139)	4.0089 (.9386)	+.027
	Control	4.1124 (1.0462)	4.1754 (.9602)	+.063
2) Psychological States	Experimental	4.3450 (1.0843)	4.2990 (.8803)	-.046
	Experimental	4.3310 (.8720)	4.2213 (.9314)	-.109
	Placebo	4.0409 (1.0173)	4.0157 (1.0143)	+.025
	Control	4.1527 (1.0646)	4.2066 (.8786)	+.053
3) General Satisfaction	Experimental	4.4607 (1.0833)	4.1510 (1.0343)	-.309
	Experimental	4.3459 (.7892)	4.3592 (.7433)	+.013
	Placebo	4.0790 (1.0131)	4.1937 (.9463)	+.114
	Control	4.2252 (1.0023)	4.0909 (.9015)	-.134

TABLE 4 (continued)

Means, Standard Deviations, and Directional Change of
Survey Variables Broken Down by Each Treatment Condition

SURVEY VARIABLE	TREATMENT	PRE-TEST	POST-TEST	Directional Change of \bar{X}
4) Specific Satisfaction	Experimental	3.9172 (1.1234)	4.1372 (1.1751)	+ .220
	Experimental	4.0731 (.9351)	4.3721 (1.0731)	+ .299
	Placebo	3.6869 (1.1134)	3.7143 (1.1399)	+ .027
	Control	3.9296 (1.1186)	3.8531 (1.1505)	-.076
5) Higher Need Strength	Experimental	8.07456 (1.6843)	7.5022 (1.7043)	-.573
	Experimental	7.6154 (1.8476)	7.3692 (1.7511)	-.246
	Placebo	7.7718 (1.6203)	8.0873 (1.5095)	+ .315
	Control	7.9000 (1.5206)	8.2640 (1.5394)	+ .360
6) Intergroup Relations	Experimental	3.9433 (1.1184)	4.1815 (1.0531)	+ .238
	Experimental	4.3698 (1.2903)	4.2396 (1.1771)	-.130
	Placebo	4.0115 (1.0756)	4.1782 (1.1232)	+ .166
	Control	4.1641 (1.2176)	4.0352 (1.2511)	-.128

TABLE 4 (continued)
Means, Standard Deviations, and Directional Change of
Survey Variables Broken Down by Each Treatment Condition

SURVEY VARIABLE	TREATMENT	PRE-TEST	POST-TEST	Directional Change of \bar{X}
7) Supervisory Consideration (Now)	Experimental	3.6516 (1.1773)	4.0123 (.9868)	+ .360
	Experimental	4.4222 (1.3524)	3.9778 (1.1832)	- .444
	Placebo	3.7159 (1.1660)	3.9006 (1.1488)	+ .184
	Control	4.0625 (1.4263)	3.8824 (1.2933)	- .180
8) Supervisory Consideration (Wanted)	Experimental	4.8115 (1.3614)	4.4959 (1.1044)	- .315
	Experimental	5.0222 (1.5270)	4.9500 (1.1973)	- .072
	Placebo	4.6463 (1.1824)	4.5427 (1.1374)	- .103
	Control	4.7077 (1.3811)	4.4423 (1.3641)	- .265

declined $-.315$, and experimental treatment condition two declined $-.072$. This outcome is consistent with the findings of Lawler, Hackman, and Kaufman (1973). It appears that specific action plans implemented from the survey feedback manipulation provided opportunities for higher order need satisfaction in the experimental treatment conditions and exposure to these opportunities resulted in a lesser desire for such opportunities as reflected in the soldiers' post-test scores. The soldiers in the placebo and control treatment conditions were not provided opportunities for higher order need satisfaction; thus, their desire remained strong when measured at time two. A similar rationale can be offered to account for the increase noted for the control condition for the measure Supervisory Consideration (Wanted). That is, these soldiers not having experienced the survey feedback manipulation still want more personal consideration from their immediate supervisors.

From the preceding discussion, it is clear that there were differences noted among the treatment conditions. At this point, however, it is not clear from this global perspective what effects can be attributed to which manipulations or moderating influences. The next portion of this section addresses these issues by reporting the results of the specific hypotheses in this study.

Test of Hypothesis 1

The reader will recall that hypothesis 1 was stated as follows:

H₁: Intervention Effectiveness. The experimental treatment units will have a significant improvement in organization effectiveness following the survey feedback intervention. The placebo and control units will have no significant changes in organization effectiveness.

A series of 4 x 2 analyses of variance with repeated measures were used to determine whether there were significant improvements in organization efficiency between time periods one and two. Objective data from three types of projects were compared separately. The project categories were as follows: (1) Type one projects consisted of assorted requests for sign construction or repair. Examples of the work requests received include building wooden/metal signs for safety, danger, hazards, signs used for reenlistment unit designations, change of major commands, tank trail markers, training aids for field problems, etc. (2) Type two projects consisted of small construction and repair of facilities. Example of work requests include plumbing, electrical, wiring, carpentry construction and refurnishment of latrines, barracks, bleachers and training sites. (3) Type three projects pertained to road construction. Examples of requests include limited road surface repairs, salt, snow removal, tank trail grading, and sidewalk repairs.

Each of the three types of projects are performed by each company as part of the post support mission. Therefore,

the manhours used for these activities can be compared over time to see if there is any difference. A fourth type of project, heavy construction, was not included in this analysis because each unit will not have done the same task. More specifically, one unit may be tasked to drain a pond, while another unit would build a bridge. A third unit may be in a marble quarry, and the fourth unit may establish a helicopter pad. Since heavy construction projects are distinctly different, between unit comparisons would not be meaningful. That is, a given heavy construction project may occur only once in an eighteen month period. The personnel turnover and other exogenous influences such as weather would make comparisons misleading. Therefore, the author chose to compare each unit at time one and time two. Then between unit comparisons for the first three types of projects were made when appropriate. The comparisons were based on manhours used to complete each given type of project.*

* Project requests are assigned monthly and assigned priorities for completion. Thus, the author requested data in such a way that all four units had a similar amount of a particular type of project assigned. This meant that the manhours were also adjusted slightly to ensure that the unit reporting strength was considered. Thus, if unit B had 75 type one projects and 150 persons to work on them and unit D had 75 type one projects and only 75 soldiers who worked on these projects, then unit D was expected to take twice as many manhours to accomplish the same task. The manhours used to complete the project served as the index of efficiency. The officer responsible for manhour reports would not release data concerning materials cost. He did state that there were no project delays due to materials costs or delays. Equipment density, maintenance of construction equipment, did not fluctuate over the time comparison.

Table 5 presents the ANOVA summary table for type one projects compared over time.

TABLE 5
ANOVA Summary Table: Type One Projects

Source	SS	df	MS	F Ratio	F Prob
Between Subjects	16,138,143	3			
Within Treatment	2,575,609	4			
T ₁ vs T ₂	2,152,813	1	2,152,813	15.27	.04
Residual*					
Interaction	422,796	3	140,932		
Total	18,713,752	7			

The results of the ANOVA for type one projects reveal that there is a significant difference $p \leq .04$ between time periods one and two. However, the analysis does not explicate if the significant improvement in efficiency pertains only to the experimental treatment units. Since it is hypothesized a priori that there would be differences both between units and over time, a posteriori comparisons between

* Although the term residual is used here as an error estimate based upon the discussion found in Winer (1971), the residual term is actually an interaction term of subjects, the four conditions and the treatment measure, time. Since this analysis is a single factor repeated measures test with $k=2$ treatments repeated here as time one and time two, $k-1$ degrees of freedom precludes a statistical test of the residual interaction term because there is no standard error.

the experimental treatment units and the control unit were performed using Dunnett's t statistic. The results are presented in Table 6.

TABLE 6

A Posteriori Comparison Between Experimental Treatments and the Control For: Type One Projects

A Posteriori Comparison	-		F	F
	d:	MSerror	Ratio	Probability
	(a)	(b)	(a ÷ b)	
Exper TR #1 - Control	946	265.45	3.56	.01
Exper TR #2 - Control	1126	265.45	4.21	.005

The results of this analysis indicate that both experimental treatment conditions were significantly different from the control unit at time two. Therefore, the two units participating in the survey feedback programs experienced significant improvements in work efficiency when compared to the no treatment control unit.

Table 7 presents the ANOVA summary table for type two projects compared over time.

TABLE 7
ANOVA Summary Table: Type Two Projects

Source	SS	df	MS	F Ratio	F Prob
Between Subjects	25,802,561	3			
Within Treatment	10,230,493	4			
T ₁ vs T ₂	482,060	1	482,060	.14	ns
Residual Interaction	9,748,433	3	3,249,477		
Total	36,033,054	7			

The results of the ANOVA for type two projects reveal that there is no significant difference between time periods one and two. No further analysis is needed. The analysis of type two work projects does not support the prediction stated in hypothesis 1.

Table 8 presents the ANOVA summary for type three projects compared over time. The results of the ANOVA for type three projects reveal that there is no significant difference for the pre survey and the post survey time periods. No further analysis is needed.

TABLE 8

ANOVA Summary Table: Type Three Projects

Source	SS	df	MS	F Ratio	F Prob
Between Subjects	2,252,821	3			
Within Treatment	2,695,445	4			
T ₁ vs T ₂	130,558	1	130,558	.15	ns
Residual Interaction	2,564,887	3	854,962.3		
Total	4,948,266	7			

In summary, there was significant improvement in experimental treatment units over time for one work efficiency measure. There was no significant difference over time noted for the other two measures of work efficiency. Therefore, hypothesis 1 was supported by only one of the three standards of efficiency used.

Tests of Hypothesis 2

Hypothesis 2 was stated as follows:

H₂: Affective Responses to Work. The soldiers within the experimental treatment units will have greater improvements in their levels of job satisfaction and internal work motivation than soldiers within placebo and control units.

A series of 4 X 4 X 2 analyses of variance were used for each composite of the measures of personal affect. In addition, cell means for the units have been given for time periods one and two. Finally, profiles have been provided to

TABLE 9

Cell Means, Standard Deviations, and Sample Sizes
for the Composite Measure: General Satisfaction

Treatment Condition	Pre-Test	Post-Test
Experimental Treatment 1	4.4607 (1.0833) n=59	4.1510 (1.0343) n=59
Experimental Treatment 2	4.3459 (.7892) n=47	4.3592 (.7433) n=47
Placebo	4.0790 (1.0131) n=80	4.1837 (.9463) n=80
Control	4.2252 (1.0023) n=68	4.0909 (.9015) n=68

Table 10 indicates the results of a 4 X 4 X 2 ANOVA for
the composite measure: General Satisfaction.*

* These data are reported for each treatment condition. The reader will recall that there are four platoon units (factor B) nested within each of the treatment conditions. Moreover, there are subjects (factor C) double nested within units, within treatments. Rather than report the one hundred and twenty-eight tables of computations by platoon size unit in this dissertation (sixteen platoons by eight dependent measures yields one hundred and twenty-eight subanalyses), this writer will present the tabular data for each of the eight dependent measures by the four treatment conditions. This data summary is reported with the estimates and the platoon residual error estimates have been computed and pooled for each larger analysis. For convenience, the harmonic mean used for unequal cell frequencies is added in the summary table along with the standardized sums of square values which makes comparison of the factors appropriate.

The results of the ANOVA reveal that there is a marginally significant interaction effect of Factor AD $p \leq .08$. That is, there is a difference between the treatment conditions and the pre and post survey mean scores of General Satisfaction for all treatment conditions. The mean scores reported for experimental treatment one show a decline from pre-test \bar{X} 4.46 to post test 4.15. Almost no change was noted for the second experimental treatment condition, \bar{X} 4.35 to \bar{X} 4.36. The placebo condition reported a slight increase from a pre-test mean 4.08 to a post test mean of 4.18, and the control condition reported a slight decline \bar{X} 4.23 to \bar{X} 4.09.

The A main effect can most readily be observed at time two as the difference between experimental treatment condition one, the placebo and the control conditions which all cluster together, and experimental treatment condition two which does not.

The profile at Figure 8 also illustrates that the decline in general satisfaction for experimental treatment one has accounted for the moderately significant interaction of the treatment factor with the repeated measure term.

To further clarify the treatment by repeated measures interaction effect, an ANOVA of the simple main effects of the repeated measures factor was conducted. The results of the analysis are presented in Table 11.

The data analysis from Table 11 compliments the pictorial representation illustrated in Figure 3. That is, the significant decline $p \leq .001$ in the scores for General Satisfaction

TABLE 10
4 X 4 x 2 ANOVA Summary Table: General Satisfaction

SOURCE	SS	HM(\tilde{n})	SS (Stan- dardized)	DF	MS	F RATIO	F PROB
BETWEEN SUBJECTS			296.6121	255			
FACTOR A (TREATMENTS)	.7684	9.1368	7.0207	3	2.3402	1.6402	.23
FACTOR B (UNITS W/ TREATMENTS)	1.8739	9.1368	17.1214	12	1.4267	1.2567	ns
FACTOR C (SUBJ W/UNIT W/TREATMENTS ERROR BETWEEN)	272.470		272.470	240	1.1352		
WITHIN SUBJECTS			170.499	256			
FACTOR D (REPEATED MEASURES)	.0421	9.1368	.3846	1	.3846	.3156	ns
FACTOR AD (REPEAT X TREATMENT)	.400	9.1368	3.6547	3	1.2182	2.9497	.08
FACTOR BD (REPEAT X UNIT W/TREAT- MENT)	.5425	9.1368	4.9567	12	.4130	.6137	ns

TABLE 10 (continued)
4 X 4 X 2 ANOVA Summary Table : General Satisfaction

SOURCE	SS	HM(\tilde{n})	SS (Stan- dardized)	DF	MS	F RATIO	F PROB
FACTOR CD (REPEAT X SUBJECT W/UNIT W/TREAT- MENT ERROR WITHIN	161.503		161.503	240	.6729		
TOTAL			467.1111	511			

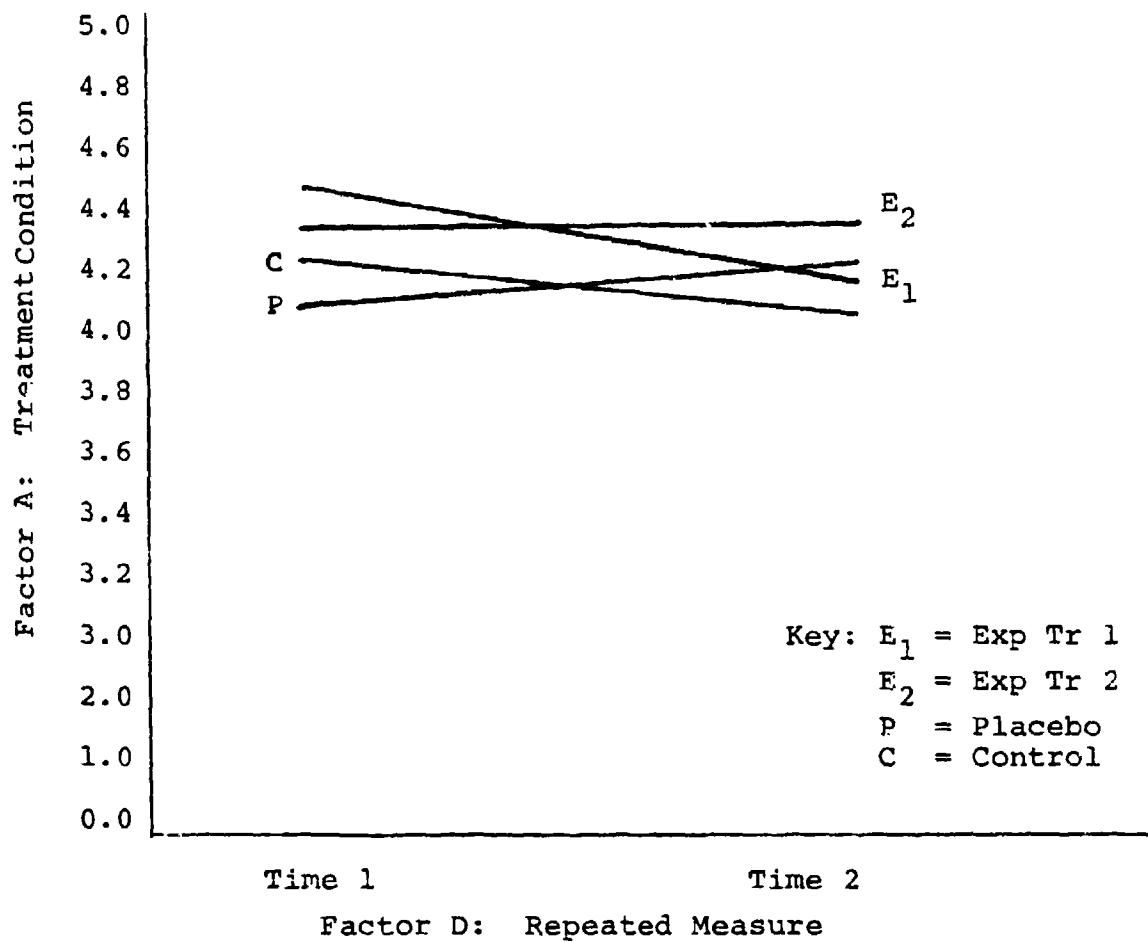


Figure 8

Time 1 Versus Time 2 General Satisfaction Scores
for Levels of Factor A: Treatment Condition

by the soldiers in experimental treatment one accounts for the overall interaction effect noted in Table 10.

TABLE 11
Analysis of Variance for Simple Effects
of Repeated Measures for General Satisfaction

Source	SS	SS (STD) *	df	MS	F Ratio	F Prob
D at a ₁ (Exp Tr 1)	.3126	2.8561	1	2.8561	4.6539	.001
D at a ₂ (Exp Tr 2)	.0190	.1742	1	.1742	.2839	ns
D at a ₃ (Placebo)	.0574	.5247	1	.5247	.8550	ns
D at a ₄ (Control)	.0526	.4806	1	.4806	.7832	ns
Error Within	- -	161.503	240	.6729		
* HM n 9.1368993						

These tabular data seem to contradict the a priori hypothesis of improved general satisfaction for soldiers in the experimental treatment conditions. However, a closer look at the data for the four platoons in experimental treatment one indicates that general satisfaction declined in all four units but most dramatically in platoon four. The data are summarized in Table 12.

TABLE 12

Means, Directional Change, and Cell Size for
Each Platoon in Experimental Treatment One for
General Satisfaction

Platoon	Pre-Test	Post-Test	\bar{X} Change	n
1	4.6684	4.4278	-.2406	17
2	4.1942	3.9545	-.2397	22
3	4.4848	4.0657	-.4191	18
4	5.4091	4.7273	-.6818	2
Total	4.4607	4.1510	-.3090	59

Although a weighted means solution was used in the platoon level analysis due to the different cell sizes, a change of -.68 still attributed a large extent to the level of the decline. In addition, the author found that the company commander of the four platoon units in treatment one had decided to resign from the Army in July. It is not known what effect, if any, this notification may have had on the general morale of the soldiers in this unit. Nevertheless, since experimental treatment one had a significant decline, hypothesis 2 is not supported for the measure of General Satisfaction.

Specific Satisfaction

Table 13 presents the cell means, standard deviations and sample sizes for the composite measure Specific Satisfaction. Figure 9 plots the pre and post survey mean scores of Specific Satisfaction, and Table 14 presents the summary data from a 4 X 4 X 2 ANOVA.

The results of the overall ANOVA indicate that there is no significant interaction of Factor AD, treatment conditions by repeated measures.

TABLE 13

Cell Means, Standard Deviations, and Sample Sizes
for the Composite: Specific Satisfaction

Treatment Condition	Post-Test	Post-Test
Experimental Treatment 1	3.9172 (1.1234) n=63	4.1372 (1.1751) n=63
Experimental Treatment 2	4.0731 (.9351) n=43	4.3721 (1.0731) n=43
Placebo	3.6869 (1.1134) n=70	3.7143 (1.1399) n=70
Control	3.9296 (1.1186) n=86	3.8531 (1.1505) n=86

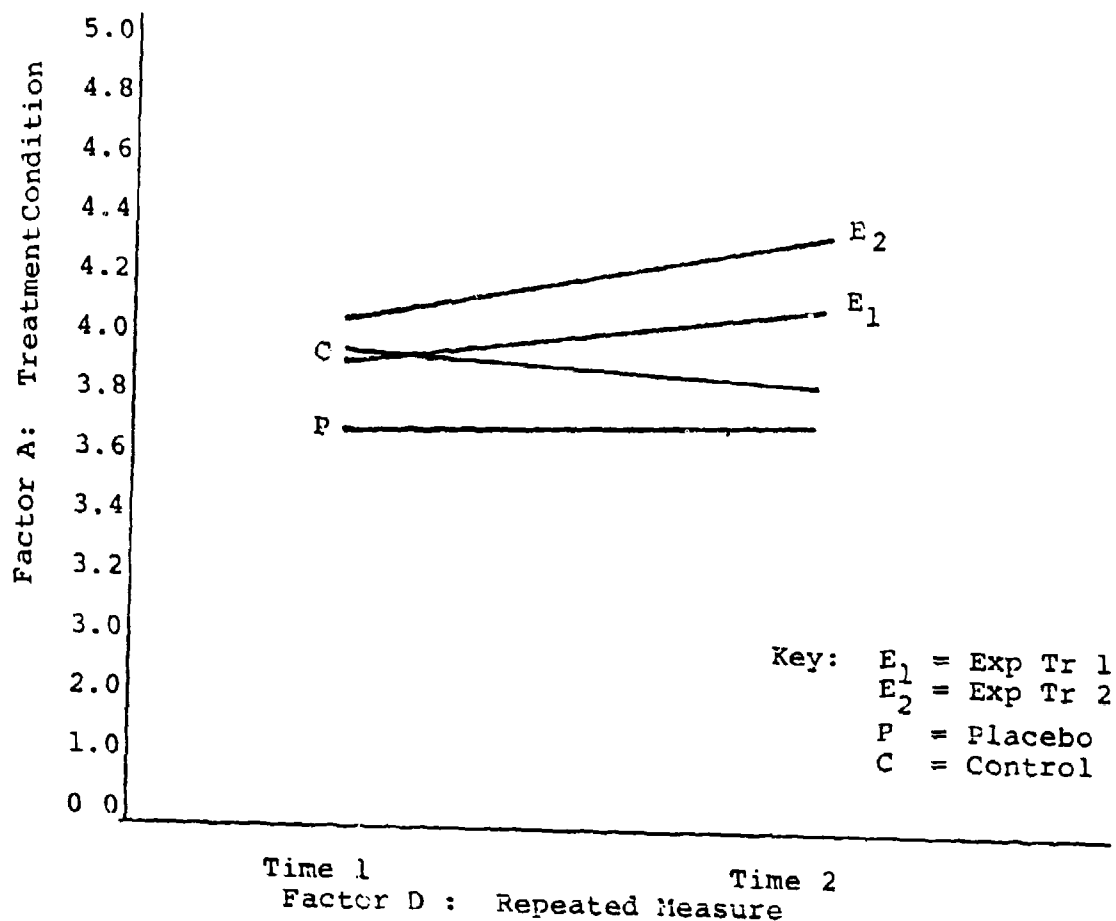


Figure 9
Time 1 Versus Time 2 Specific Satisfaction
Scores for Levels of Factor A: Treatment
Condition

TABLE 14
4 X 4 X 2 ANOVA Summary Table: Specific Satisfaction

SOURCE	SS	HM(\bar{n})	SS (Standardized)	DF	MS	F RATIO	F PROB
BETWEEN SUBJECTS			413.9079	255			
FACTOR A (TREATMENTS)	.9921	10.9945	10.9076	3	3.6358	2.1668	.17
FACTOR B (UNITS W/TREATMENTS)	1.8314	10.9945	20.1353	12	1.6779	1.0521	ns
FACTOR C (SUBJ W/UNIT W/TREATMENTS ERROR BETWEEN)	382.7650		382.765	240	1.5948		
WITHIN SUBJECTS			227.5364	256			
FACTOR D (REPEATED MEASURES)	.0683	10.9945	.7509	1	.7509	1.1511	ns
FACTOR AD (REPEAT X TREATMENT)	.1780	10.9945	1.9570	3	.6523	.8106	ns
FACTOR BD (REPEAT X UNIT W/TREATMENT)	.8784	10.9945	9.6575	12	.8047	.8976	ns
FACTOR CD (REPEAT X SUBJECT W/UNIT W/TREATMENT ERROR WITHIN)	215.171		215.171	240	.8965		
TOTAL			641.3443	511			

No further analyses are necessary. Hypothesis 2 was not supported for the measure of Specific Satisfaction.

Test of Hypothesis 3

Hypothesis 3 was stated earlier as follows:

H₃: Intergroup Relations. The platoons within the experimental units will have better work relations than the platoons in the placebo and control units.

Table 15 presents the means, standard deviations, and cell frequencies for the criterion variable Intergroup Relations.

Table 16 presents the results of a 4 X 4 X 2 ANOVA for the dependent variable: Intergroup Relations. The results of the ANOVA indicate that there was no significant interaction of units within treatments and the repeated measure. This being the case, any attention given to Factor A, difference between treatments, would not be warranted. That is, any significant simple main effects would be suspicious. However, it is useful to plot the cell means to determine directionality of the difference. Figure 10 presents these results. The graph shows a positive directional change in the experimental treatment condition one and in the placebo treatment condition as well. There was a negative change in experimental treatment condition two and in the no treatment control condition. The reader is cautioned that these directional changes of the simple effects cannot be interpreted as statistically significant given the non-significant overall

TABLE 15

Cell Means, Standard Deviations, and Sample Sizes
for the Composite Measure: Intergroup Relations

Treatment Condition	Pre-Test	Post-Test
Experimental Treatment 1	3.9435 (1.1184) n=62	4.1815 (1.0531) n=62

Experimental Treatment 2	4.3698 (1.2903) n=48	4.2396 (1.1771) n=48

Placebo	3.7159 (1.1660) n=87	3.9006 (1.1488) n=87

Control	4.0625 (1.4263) n=64	3.8824 (1.2933) n=64

TABLE 16
4 X 4 X 2 ANOVA Summary Table: Intergroup Relations

SOURCE	SS	HM(\bar{n})	SS (Stan- dardized)	DF	MS	F RATIO	F PROB
BETWEEN SUBJECTS			409.2765	255			
FACTOR (TREATMENTS)	.4938	11.2621	5.5612	3	1.8537	.7567	ns
FACTOR B (UNITS W/ TREATMENTS)	2.6102	11.2621	29.3963	12	2.4496	1.5706	.24
FACTOR C (SUBJ W/UNIT W/TREATMENTS ERROR BETWEEN)	374.319		374.3190	240	1.5596		
WITHIN SUBJECTS			291.7453	256			
FACTOR D (REPEATED MEASURES)	.0006	11.2621	.0067	1	.0067	.0372	ns
FACTOR AD (REPEAT X TREATMENT)	.0480	11.2621	.5405	3	.1801	.1516	ns
FACTOR BD (REPEAT X UNIT W/TREAT- MENT)	1.2653	11.2621	14.2499	12	1.1874	1.0290	ns
FACTOR CD (REPEAT X SUBJECT W/UNIT W/TREAT- MENT ERROR WITHIN)	276.9482		276.9482	240	1.1539		
TOTAL			701.0218	511			

interaction previously described in Table 16. However, one could suggest that a logical explanation for the positive changes noted in experimental unit one could have resulted from the frequency of interaction between the soldiers and their immediate supervisors caused by the feedback meetings. A similar effect may have accounted for the slight increase reported for units within the placebo condition. The placebo manipulation consisted of platoon size meetings and rap sessions to simulate feedback activities.

Alternatively, the slight decline noted in the experimental condition two could have resulted from soldiers who became too critical about how survey feedback meetings were being conducted. This explanation seems quite plausible based upon the within treatment inspection of pre and post survey scores. Table 17 shows these results.

TABLE 17
Cell Means, Directional Change, and Cell Sizes
for Each Platoon in Experimental Treatment Two
for Intergroup Relations

Platoon	Pre-Test	Post-Test	\bar{X} Change	n
1	4.1333	4.2667	+.1334	15
2	4.7250	4.1000	-.625	20
3	4.3750	4.6563	+.2813	8
4	3.6500	4.0500	+.4000	5
Total	4.3698	4.2396	-.1302	48

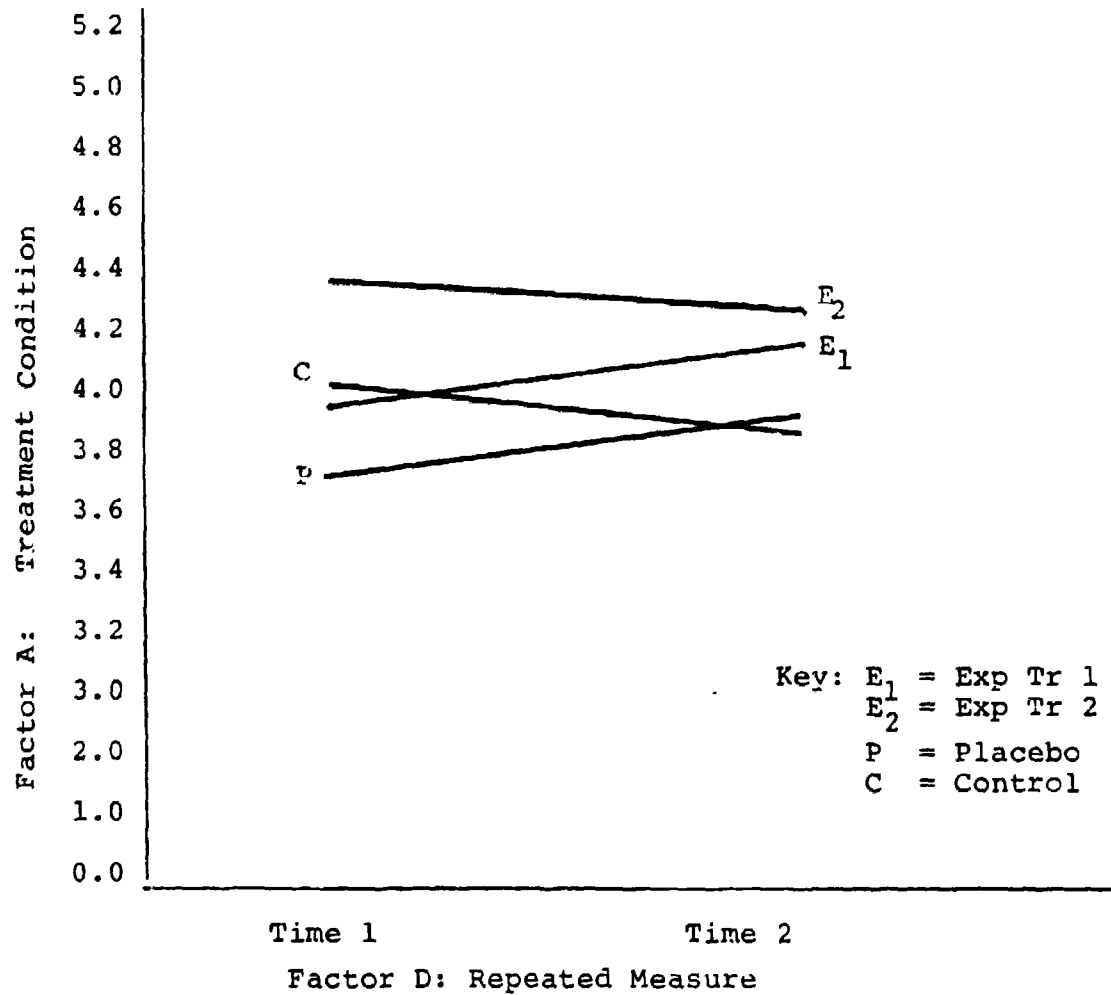


Figure 10
Time 1 Versus Time 2 Intergroup Relations
Scores for Levels of Factor A: Treatment
Condition

The summary shows a positive increase in three of the four platoons which make up experimental treatment two. Note, however, that the second platoon reported a negative change of $-.625$, although these changes are presented as logical explanations the fact remains that there was no overall interaction effect present. Therefore, this author must conclude that hypothesis 3 was not supported by these data.

Test of Hypothesis 4

Hypothesis 4 was stated earlier as follows:

H_4 : Supervisory Consideration. The soldiers within the experimental units will have greater perceived supervisory consideration than soldiers within placebo and control units.

Supervisory Consideration (Now)

Table 18 presents the means, standard deviations, and cell frequencies for the criterion measure Supervisory Consideration (Now).

TABLE 18

Cell Means, Standard Deviations, and Sample Sizes
for the Composite Measure: Supervisory Consideration (Now)

Treatment Condition	Pre-Test	Post-Test
Experimental Treatment 1	3.6516 (1.1773) n=61	4.0123 (.9868) n=61
Experimental Treatment 2	4.4222 (1.3524) n=45	3.9778 (1.1832) n=45
Placebo	3.7159 (1.1660) n=88	3.9006 (1.1488) n=88
Control	4.0625 (1.4263) n=68	3.8824 (1.2933) n=68

Table 19 summarizes the results of a 4 X 4 X 2 ANOVA for the dependent variable, Supervisory Consideration (Now). The results of the ANOVA indicate that there is a moderately significant interaction of treatment conditions and the repeated measure $p \leq .07$. Because a significant interaction was present a closer look at the simple main effects is warranted. Figure 11 plots the directional change of the means for each of the treatment conditions from time one to time two. These results show that there is a positive change between the scores reported for experimental treatment condition one and also for the placebo condition. There was a negative change in the scores reported for experimental treatment two and in the control condition.

TABLE 19
4 X 4 X 2 ANOVA Summary Table: Supervisory Considerations (Now)

SOURCE	SS	HM(\tilde{n})	SS(Stan- dardized)	DF	MS	F RATIO	F PROB
BETWEEN SUBJECTS			446.3121	255			
FACTOR A (TREATMENTS)	.9343	11.4141	10.6641	3	3.5547	2.8736	.08
FACTOR B (UNITS W/ (TREATMENTS))	1.3005	11.4141	14.8440	12	1.2370	.7055	ns
FACTOR C (SUBJ W/UNIT W/TREATMENTS ERROR BETWEEN)	420.8040		420.8040	240	1.7533		
WITHIN SUBJECTS			341.5676	256			
FACTOR D (REPEATED MEASURES)	.0337	11.4141	.3846	1	.3846	.0632	ns
FACTOR AD (REPEAT X TREATMENT)	1.597	11.4141	18.2283	3	6.0761	3.3215	.07
FACTOR BD (REPEAT X UNIT W/TREAT- MENT)	1.9233	11.4141	21.9527	12	1.8293	1.4586	.25
FACTOR CD (REPEAT X SUBJECT W/UNIT W/TREAT- MENT ERROR WITHIN)	301.0020		301.0020	240	1.2541		
TOTAL			787.8797	511			

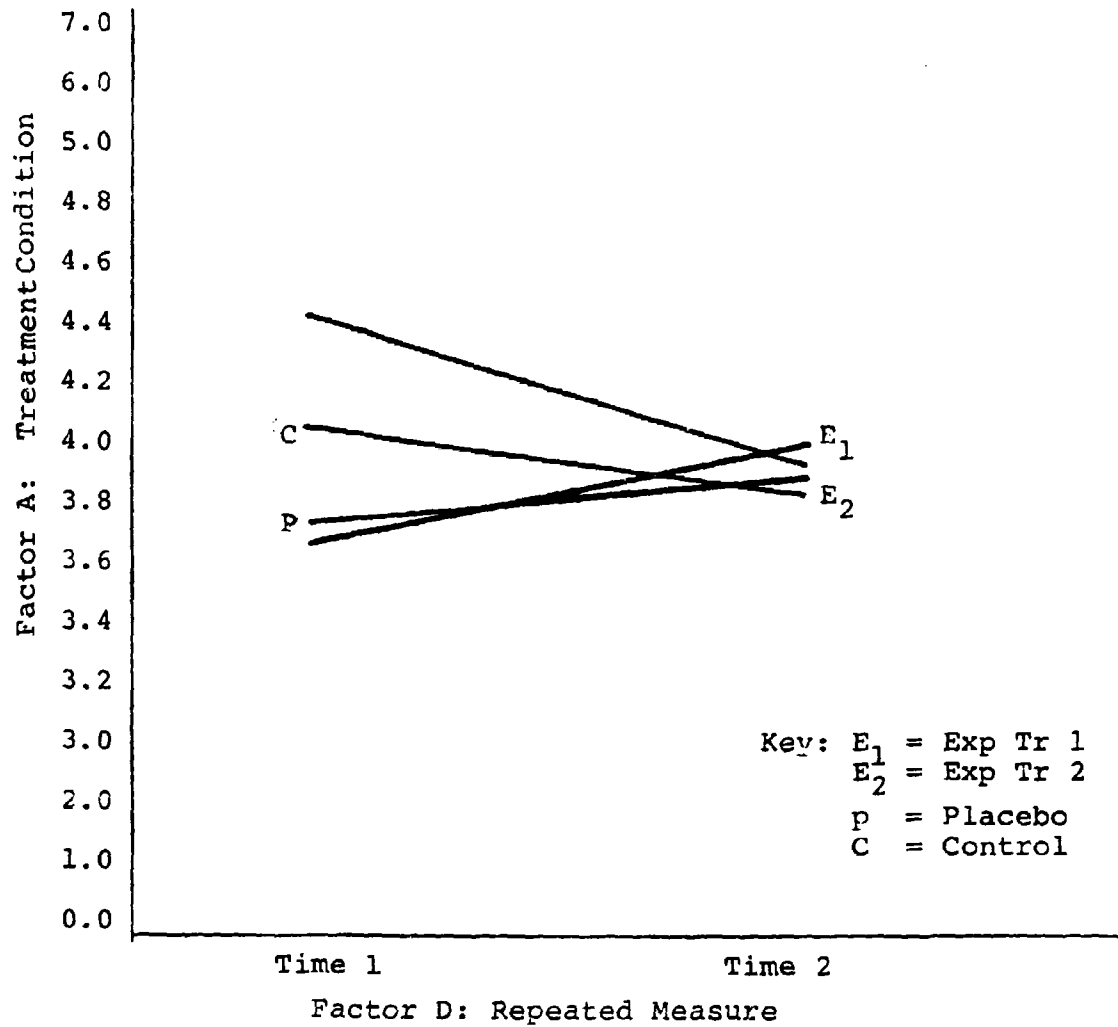


Figure 11

Time 1 Versus Time 2 Supervisory Consideration (Now)
Scores for Levels of Factor A: Treatment
Condition

Concerning the A main effect (treatment), it can readily be observed that at time one there was a simple A main effect which is lost as the four treatment conditions converge or cluster at time two. Thus, the overall A main effect is due primarily to the differences between the two experimental treatment conditions at time one.

Concerning the D main effect an ANOVA of the simple effects of the repeated measures is given in Table 20. The data show that the significant interaction is primarily due to factor D at level a_1 and factor D at level a_2 . Both are statistically significant $p \leq .005$. However, the interaction also points out that one group's opinion of supervisory consideration declined to a level $\bar{X} = 3.97$ while the other experimental group scores increased to the same approximate level $\bar{X} = 4.01$. Thus, it would appear that both experimental treatment groups had significant changes with treatment one supporting the hypothesis and treatment two not supporting the hypothesis. One could argue that there are two alternative explanations for these results: (1) the increase reported by experimental treatment group one was a result of improved communications and problem solving which was a result of the feedback meetings and action plans which followed. That is, this treatment condition may have singled out the need for more consideration to be given to the problems of subordinates. This explanation seems plausible given the positive change noted earlier in the discussion of intergroup relations. Thus, experimental treatment condition one reported that there were improved

TABLE 20
Analysis of Variance of the Simple Effects of
Repeated Measures for: Supervisory Consideration (Now)

SOURCE	SS		df	MS	F		Prob
	SS	SS (SFD)*			Ratio	Ratio	
D at a ₁ (Exp Tr 1)	.4074	4.6504	1	4.6504	3.7082		.005
D at a ₂ (Exp Tr 2)	1.1190	12.7727	1	12.7727	10.1848		.005
D at a ₃ (Placebo)	.0872	.9954	1	.9954	.7937		ns
D at a ₄ (Control)	.0739	.8443	1	.8443	.6732		ns
Error Within	---	301.0020	240	1.2541			

*HM n = 11.414154

intergroup relations and also improved supervisory consideration. (2) Alternatively, the leadership style of the immediate supervisors in experimental treatment condition two may have been more authoritative and traditionally military. Following this suggestion, soldiers would rate their supervisors as less considerate, which they in fact did. The reader will recall that the second platoon in this treatment condition also reported a strong decline in intergroup relations. Taken in concert, one experimental condition experiencing the survey feedback manipulation supported hypothesis 4; however, the other experimental condition does not. Therefore, the results about this amount of supervisory consideration remains inconclusive.

Supervisory Consideration (Wanted)

Table 21 presents cell mean data by each treatment condition for the composite variable, Supervisory Consideration (Wanted). The reader will recall that the composite consists of four questions which ask soldiers to respond to how much more they would like supervisors to help people in the work groups with their personal problems. The a priori assumption being tested is that the scores should decline for a unit which has supervisors giving more attention to problems. Stated differently, soldiers who desire more consideration should be those whose supervisors are not doing so now; thus, soldiers want more.

TABLE 21

Cell Means, Standard Deviation, and Cell Frequencies
for the Composite Measure: Supervisory Consideration (Wanted)

Treatment Condition	Pre-Test	Post-Test
Experimental Treatment 1	4.8115 (1.3674) n=61	4.4959 (1.1044) n=61
Experimental Treatment 2	5.0222 (1.5270) n=45	4.9500 (1.1973) n=45
Placebo	4.6463 (1.1824) n=82	4.5427 (1.1384) n=82
Control	4.7077 (1.8311) n=65	4.4423 (1.3641) n=65

Table 22 presents a 4 X 4 X 2 ANOVA for the dependent variable, Supervisory Consideration (Wanted). The results of this analysis indicate no significant interaction between treatment conditions and the repeated measures. Therefore, an analysis of the simple main effects is not appropriate. Nevertheless, a profile of the simple effects of treatment conditions for time one and time two is given to see what directional changes had taken place. Figure 12 shows the profile.

As expected, treatment condition one which reported earlier improvements in Supervisory Consideration (Now) indicates a decline in more consideration (Wanted). More specifically, as the soldiers' need for supervisory consideration

TABLE 22
4 X 4 X 2 ANOVA Summary Table: Supervisory Consideration (Wanted)

SOURCE	SS	HM(\bar{n})	SS (Standardized)	DF	MS	F RATIO	F PROB
BETWEEN SUBJECTS			430.6788	255			
FACTOR A (TREATMENTS)	.9097	11.0796	10.0791	3	3.3597	1.0385	ns
FACTOR B (UNITS W/TREATMENTS)	3.5038	11.0796	38.8207	12	3.2350	2.0335	.12
FACTOR C (SUBJ W/UNIT W/TREATMENTS ERROR BETWEEN)	381.7990		381.7790	240	1.5908		
WITHIN SUBJECTS			391.2704	256			
FACTOR D (REPEATED MEASURES)	.3766	11.0796	4.1725	1	4.1725	2.5676	.22
FACTOR AD (REPEAT X TREATMENT)	.4400	11.0796	4.8750	3	1.6250	.5476	ns
FACTOR BD (REPEAT X UNIT W/TREATMENT)	3.2141	11.0796	35.6109	12	2.967	2.0544	.12
FACTOR CD (REPEAT X SUBJECT W/UNIT W/TREATMENT ERROR WITHIN)	346.6120		346.6120	240	1.4442		
TOTAL			821.9492	511			

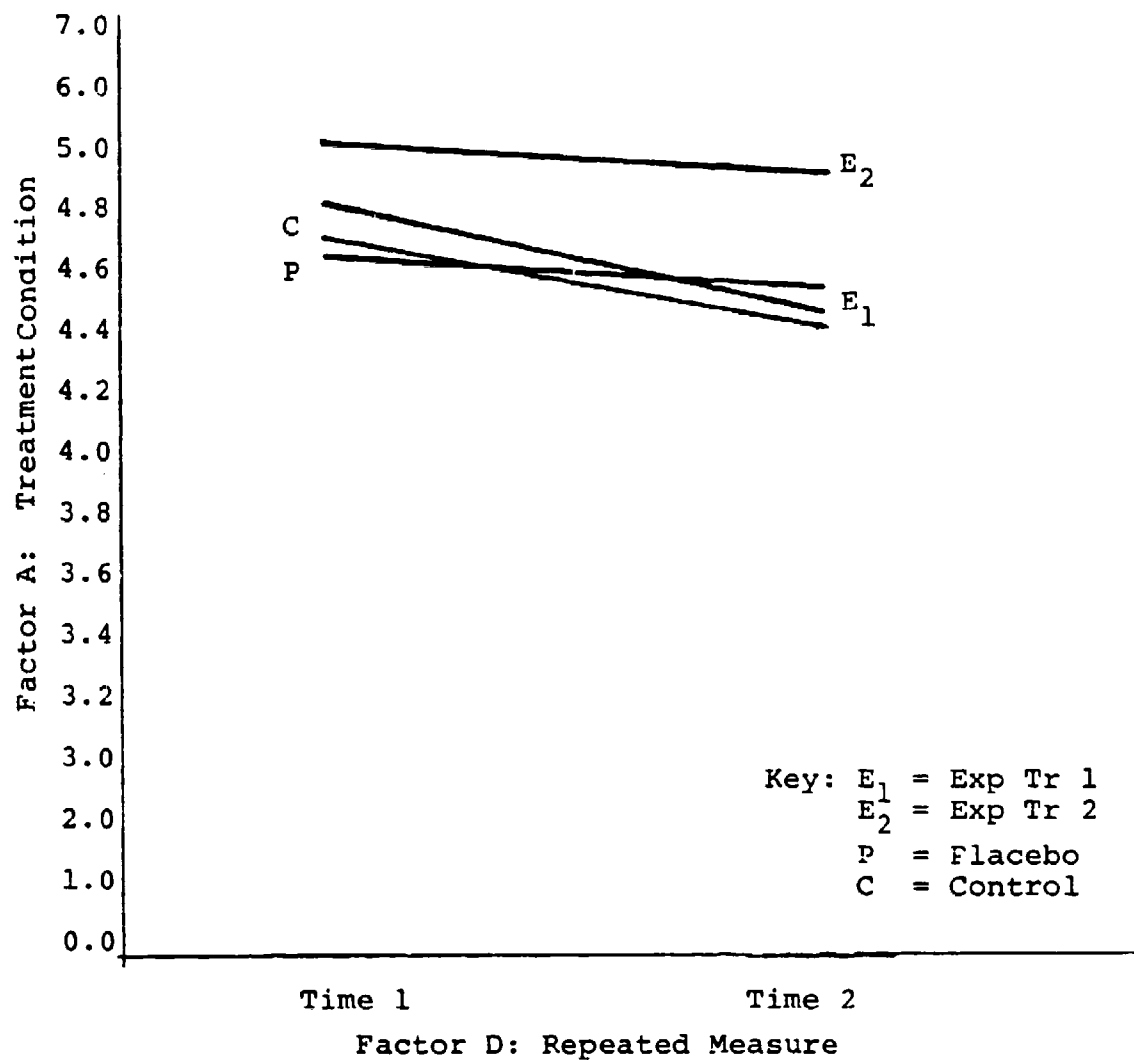


Figure 12

Time 1 Versus Time 2 Supervisory Consideration (Wanted)
Scores for Levels of Factor A: Treatment
Condition

was satisfied, their demand for that need as measured by consideration (Wanted) should and appeared to decline. Treatment condition two, which did not report an overall improvement in consideration (Now), did not increase greatly as expected, but it remained almost the same ($-.07$ change). A closer look within experimental treatment two by platoon shows that three of the four platoons did report an overall increase, but one platoon's scores declined. Table 23 presents the platoon data. The placebo treatment condition declined but only slightly $-.10$, and the control condition declined $-.25$. Thus, there was a decline in all of the treatment conditions. Therefore, hypothesis 4 is not supported by the criterion measure Supervisory Consideration (Wanted).

TABLE 23

Cell Means, Directional Change and Cell Sizes for Each Platoon in Experimental Treatment Two/or Supervisory Consideration (Wanted)

Platoon	Pre-Test	Post-Test	\bar{X} Change	n
1	4.9643	4.9821	+ .0178	14
2	4.6528	5.0139	+ .3611	18
3	6.2500	4.7500	-1.5000	8
4	4.5500	4.9500	+ .4000	5
Total	5.0222	4.9500	- .0722	45

A brief summary of the tests of hypothesis is appropriate before turning attention to the moderating and ancillary measures.

(1) With regard to hypothesis 1, experimental treatment units showed a greater improvement in organization efficiency as a result of the survey feedback manipulation in one of three work categories tested.

(2) Concerning hypothesis 2, general satisfaction for one experimental treatment condition did improve but declined for the other. Specific satisfactions increased for both of the experimental treatment conditions and remained relatively unchanged for the placebo and control conditions. However, the positive increases noted in the experimental conditions were not statistically greater than those of the placebo and control units. Thus, hypothesis 2 was not supported by these data.

(3) In hypothesis 3, intergroup relations scores showed a positive change in seven of the eight platoons which comprise the two experimental treatment conditions. Intergroup relations scores showed a negative change in the eighth platoon. Overall, there was no statistically significant difference between treatment conditions for the measure intergroup relations. Thus, hypothesis 3 was not supported.

(4) Concerning hypothesis 4, there was a significant difference between the two experimental treatment conditions, for the measure supervisory considerations (Now). One group

group supported the hypothesis of greater supervisory consideration, the other experimental treatment disconfirmed the hypothesis. In addition, there was no significant difference between treatment conditions concerning the amount of supervisory consideration Wanted. Thus, the results of this hypothesis remain inconclusive for the measure supervisory consideration (Now), and hypothesis 4 is not supported by the data for the measure supervisory consideration (Wanted).

Moderating Variables

Three moderating variables will be discussed in this portion of the results section. The three variables are: (1) Experienced Psychological States, (2) Higher Order Growth Need Strength, and (3) Leadership Style of the Supervisors. It has been posited that these three variables could moderate the relationship between the independent manipulations and the criterion measures.

Experienced Psychological States

Previous research reported by Hackman and Oldham (1974) has shown that positive personal work outcomes (i.e., high work satisfaction, high quality of performance, and low absenteeism and turnover) are obtained when the following three psychological states are present: (1) experienced meaningfulness of work, (2) experienced responsibility for work, and (3) knowledge of results. Hackman and Oldham (1974) also

report that the three psychological states are created by the presence of a composite of job dimensions. Thus, the first step was to conduct a 4 X 4 X 2 ANOVA of the soldiers' responses to the job dimensions composite to see if the five characteristics of skill variety, task identity, task significance, job autonomy, and feedback from work itself were different for soldiers in the four treatment conditions. Table 24 lists the results.

The results of the ANOVA reveal that there is no significant difference between treatments from time one to time two based on the AD interaction. However, there was a suspicious difference between treatment conditions. A profile of the means was plotted at Figure 13. The results indicate that the $p \leq .15$. A main effect was due to the difference between treatment conditions at time one. Thus, this writer has concluded that overall the characteristics which make up the soldiers jobs were not significantly different between the treatment conditions in providing variety, identity, significance, autonomy, or feedback. Because there were no differences in job qualities, one would not expect that the soldiers would have experienced any difference in the measured psychological states. An ANOVA of the soldiers' responses to the composite of experienced psychological states supports the claim that there are no differences in work meaningfulness, experienced responsibility, and knowledge of results between the treatment units (See Table 25). Experienced Psychological States has not been shown to moderate the relationship between

TABLE 24
4 X 4 X 2 ANOVA Summary Table: Job Dimensions

SOURCE	SS	H:1(\bar{n})	SS(STD)	DF	MS	F RATIO	F PROB
BETWEEN SUBJECTS			275.4352	255			
FACTOR A (TREATMENTS)	.4010	11.2770	4.5220	3	1.5073	2.2924	.15
FACTOR B (UNIT W/ (TREATMENTS))	.6907	11.2770	7.8902	12	.6575	.5999	ns
FACTOR C (SUBJ W/UNIT W/TREATMENTS ERROR BETWEEN)	263.0230		263.0230	240	1.0959		
WITHIN SUBJECTS			152.9285	256			
FACTOR D (REPEATED MEASURES) PRE/POST	.0291	11.2770	.3282	1	.3282	.5188	ns
FACTOR AD (REPEAT X TREATMENT)	.1690	11.2770	1.8974	3	.6325	.6448	ns
FACTOR BD (REPEAT X UNIT W/TREAT- MENT)	1.0438	11.2770	11.7709	12	.9809	1.6947	.26
FACTOR CD (REPEAT X SUBJECT W/UNIT W/TREAT- MENT ERROR WITHIN)	138.9320		138.9320	240	.5788		
TOTAL			428.3637				

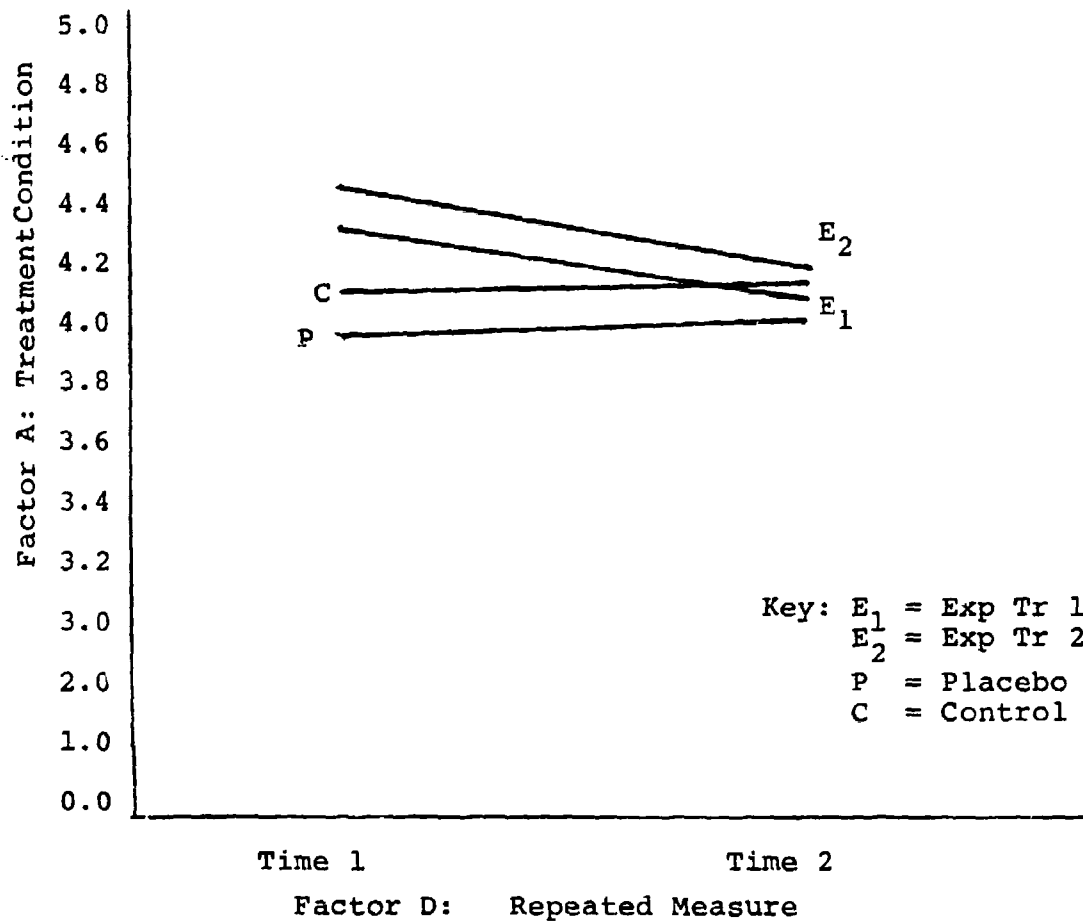


Figure 13

Time 1 Versus Time 2 Job Dimensions
Scores for Levels of Factor A: Treatment
Condition

TABLE 25
4 X 4 X 2 ANOVA Summary Table: Experienced Psychological States

SOURCE	SS	HM(n)	SS (Stan- dardized)	DF	MS	F RATIO	F PROB
BETWEEN SUBJECTS			297.3898	255			
FACTOR A (TREATMENTS)	.6866	9.2017	6.3179	3	2.1059	1.4499	ns
FACTOR B (UNITS W/ TREATMENTS)	1.8942	9.2017	17.4299	12	1.4524	1.2739	ns
FACTOR C (SUBJ W/UNIT W/TREATMENTS ERROR BETWEEN)	273.6420		273.6420	240	1.1401		
WITHIN SUBJECTS							
FACTOR D (REPEATED MEASURES)	.0154	9.2017	.1417	1	.1417	.2851	ns
FACTOR AD (REPEAT X TREATMENT)	.1620	9.2017	1.4907	3	.4969	.3559	ns
FACTOR BD (REPEAT X UNIT W/TREAT- MENT)	1.8204	9.2017	16.7508	12	1.3959	2.1432	.11
FACTOR CD (REPEAT X SUBJECT W/UNIT W/TREAT- MENT ERROR WITHIN)	156.3240		156.3240	240	.6513		
TOTAL			472.0970	511			

feedback and the dependent variables.

Higher Order Need Strength

The underlying theory for this construct developed by Hackman and Oldham (1974) suggests that there are individual differences among people in the degree to which each respondent has a strong versus weak desire to obtain growth satisfactions from the job. Individuals who score high on the measure have been shown to respond more positively (i.e., with high satisfaction) to challenging jobs. In order to assess the possible moderating influence of Higher Order Needs, the author proposed to determine the relationship of this possible moderating factor with each dependent variable using an analysis of covariance. However, in order for an analysis of covariance to be useful there should be a moderate or even significant correlation ($p \leq .10$ to $p \leq .05$) between Higher Order Need covariate and each dependent variable. The intercorrelation matrix described earlier in Table 2 illustrates that there is no significant correlation with six of the seven dependent measures in this study. Therefore, no further analysis is necessary. There is no moderate nor strong relationship between Higher Order Need Strength and the dependent variables being investigated. Higher Order Need Strength is not considered a moderating variable between the independent variables and the criterion measures in this study.

Leadership Style

The reader will recall that a Leadership Opinion Questionnaire, modified for Army use was given site Wide prior to this author's research. Capitalizing on this opportunity, this writer decided to investigate whether a commander's personal style of leadership would have any impact on the success of intervention activities. The reader will also recall that the selection of units for experimental treatment conditions was not associated with the commander's style of leadership as data about the later was not disclosed to this researcher until after the interventions had begun. This writer hoped that any difference noted between the experimental treatments could be explained by the differing styles of leadership practiced within each command. However, no such inferences can be made.

Table 26 presents a summary of the leadership style scores of the four commanders of the treatment units. These scores consist of two parts: (1) the individual's predilection toward consideration and (2) his personal bias toward emphasis on production. These two scores per person are compared to the average score for officers in that battalion.*

* This writer failed to obtain data about all officers at the research site due to issues of confidentiality. It is the personal belief of this author that there was serious apprehension about releasing leadership data to persons not involved in that research project. Therefore no true standard error estimates are available for a posteriori tests for differences between means.

TABLE 26

Summary of Leadership Style Scores for Commanders Compared
to Other Officers Within The Battalion

Commander	Consideration Score	Production Score	Battalion Average	Differ- ence
Experimental TR one	44.5	34.5	44.45	- .05
- - - - -	- - - - -	- - - - -	39.68	- 5.18
Experimental TR two	44.0	40.8	44.45	+ .05
- - - - -	- - - - -	- - - - -	39.68	+ 1.12
Placebo	48.7	37.2	44.45	+ 4.25
- - - - -	- - - - -	- - - - -	39.68	- 2.48
Control	44.9	46.7	44.45	+ .40
- - - - -	- - - - -	- - - - -	39.68	7.02

The data available show that there is no difference between the two experimental treatment commander scores for consideration. There is some difference between the same commanders' scores for their concern for production. However, these means have no anchor points from which meaningful comparisons could be made. Therefore, only this descriptive comparison can be made, and the relationship between leadership style and intervention effectiveness cannot be tested.

Other Results

In this portion of the results, the findings of three organizational efficiency measures are discussed. These findings unlike the manhour index are considered ancillary measures of efficiency. The secondary interest was promulgated more by the unit commanders' interest than theoretical concern. Also, this portion of the results will report the findings about respondent social desirability and the manipulation checks used in the post-test.

Absenteeism

Absenteeism was measured by the use of archival records. The historical data were collected for each unit twelve months prior to the pre-test and continuing up to three months beyond the post-test. The data covered a time series which allowed a comparison between an accurate pre-experiment absence base rate with the period following the intervention. To elaborate, this author originally intended to analyze a

twelve-month period, six months before the intervention and six months after. However, an inspection of the absence records indicated that there was a cyclic pattern of absences which were relatively small in the cold months and rose sharply in the warmer season. Therefore, the author chose to review absences for a twelve-month period to establish an accurate average base rate from which to compare the post manipulation period.

Table 27 presents a 4 X 2 ANOVA summary table which compares absences for the pre-test and post-test periods. The results of the ANOVA indicate that there was no significant difference in absenteeism between time one and time two. No further analysis is necessary. Absenteeism has not been influenced as a result of the survey feedback manipulations.

TABLE 27
4 X 2 ANOVA Summary Table: Absenteeism

Source	SS	df	MS	F Ratio	F Prob
Between Groups	3.4921	3			
Within Groups	3.5315	4			
T_1 vs T_2	1.3648	1	1.3648	1.8897	ns
Residual	2.1666	3	.7222		
Total	7.0236	7			

Punishment

Punishment, as reported in this study, includes reprimands, fines, and corporal punishment used by military leaders. Originally, non-judicial punishment, commonly referred to as article 15, and judicial punishment, known more readily as courts-martial, were both to be used as measures of punishment. However, an inspection of the archival data revealed that (1) a series of offences administered by non-judicial punishment could and often did result in judicial proceedings. Thus, the author would report redundant data concerning the same individual. (2) Courts-martial offenses were likely to be related to criminal offenses (i.e., robbery, rape, drugs) which had no direct relationship to work attitudes or performance. In light of the two discoveries just discussed, the author chose to use only data taken from non-judicial punishment.

The historical data collected for this measure covered the same time period as did absenteeism. In reviewing the punishment data, it was found that a similar cyclic pattern emerged as was found in absenteeism. That is, the number of article 15 administrations was fewer during the colder months and increased greatly in warmer periods. One might infer that weather had a moderating influence on absences and punishment. However, the division to which this battalion is assigned, has extensive training in the colder months in field settings. There is less chance for soldiers to get into

trouble or go AWOL from the field. Therefore, a full year was used to determine an accurate base rate of punishment.

Table 28 presents a 4 X 2 ANOVA summary which compares punishment for the time one and time two. The results of Table 28 reveal that there was no dignificant difference in punishment between time one and time two. No further analysis is necessary. Punishment rate has not changed as a result of the survey feedback interventions.

TABLE 28
4 X 2 ANOVA Summary Table: Punishment

Source	SS	df	MS	F Ratio	F Prob
Between Groups	12.1401	3			
Within Groups	5.8221	4			
T_1 vs T_2	1.8369	1	1.8369	1.3827	ns
Resudual	3.9852	3	1.3284		
Total	17.9622	7			

Reenlistment

Because one-third of the lower grade soldiers turnover annually on a three-year enlistment contract, the author investigated the assumption that soldiers in the experimental treatment units, would be more satisfied in their jobs, and they would be more inclined to reenlist for the same jobs than soldiers who were not exposed to the survey feedback interventions. The reader will recall that in order to determine an

accurate base rate, reenlistments for overseas options and options for new military occupational training schools had to be removed. When the base rate of reenlistments was determined for time one and time two, the data were insufficient for meaningful analysis. More specifically, there were time periods (months) when no reenlistment for present duty was reported. This finding seems alarming because the Army has a reenlistment objective of twenty percent of the first term enlistees.* Because of the insufficient data, an investigation of the effects of survey feedback on enlistment remains untested.

Social Desirability

There is a good deal of research in organization development in field settings which uses self report measures. Respondents are asked opinions or attitudes about some issue. Before the results of the surveys can be interpreted as accurate reflections of what the respondents actually believe, some manipulation check should be incorporated which will discern if a person is answering merely to achieve approval of others. In this research, the author used the Crowne-Marlowe social desirability scale for both the pre-test and the post-test.

* It should be noted that this study in no way is intended nor should be used to critique the reenlistment program at this military site.

Tables 29 and 30 present the social desirability statistics for each unit for the pre-test survey and the post-test survey respectively. The normative data indicate that a person's average score has been 15.1 with a standard deviation of ± 5.6 . As the results of both Tables 29 and 30 reveal, all units responses were within the acceptable range found nationally. Therefore, social desirability is not considered to be any greater in this research project than the norm.

Intervention Manipulation Checks

A series of manipulation check items about the perceived effectiveness of the intervention were included in the post-test for the two experimental units and the placebo unit. The respondents answered seven questions which dealt with activities within their work groups over the intervention time period.

Table 31 presents a summary of the soldiers' responses to questions about survey feedback meetings which were to take place at company, then platoon, then squad level.

The results in Table 31 indicate that a majority of the soldiers reported that some meetings did occur at the platoon and squad level. It is easy to see that the 70% of the soldiers in the placebo (race relations) condition would recall those meetings since the placebo unit had a salient and highly emotional theme. The data also show that a large group of no responses were made. This means that some soldiers did not

TABLE 29
Social Desirability Statistics for Each Unit
for The Pre-Test Survey

TREATMENT CONDITION	UNIT W/TREATMENT	MEAN	STANDARD DEVIATION	Mean Relative To National Norm*
Experimental	11	17.90	5.33	+ 2.80
	12	16.96	4.90	+ 1.86 Within
	13	18.94	5.28	+ 3.84 1 STD DEV
	14	19.00	2.64	+ 3.90 Above
	Overall	18.20	4.53	+ 3.10
Experimental	41	19.46	5.16	+ 4.36
	42	16.34	3.43	+ 1.44 Within
	43	17.00	4.98	+ 1.90 1 STD DEV
	44	18.80	2.16	+ 3.70 Above
	Overall	17.95	3.93	+ 2.85
Placebo	31	18.10	3.11	+ 3.00
	32	17.92	5.10	+ 2.82 Within
	33	18.59	5.38	+ 3.49 1 STD DEV
	34	17.50	6.27	+ 2.40 Above
	Overall	18.02	4.96	+ 2.92
Control	21	18.61	3.97	+ 3.51
	22	18.13	3.35	+ 3.03 Within
	23	18.70	4.85	+ 3.60 1 STD DEV
	24	18.18	1.79	+ 3.08 Above
	Overall	18.40	3.49	+ 3.30

*Normative Data \bar{X} = 15.1 STD DEV = \pm 5.6

TABLE 30
Social Desirability Statistics for Each Unit
for The Post-Test

TREATMENT CONDITION	UNIT W/TREATMENTS	MEAN	STANDARD DEVIATION	Mean Relative To National Norm*
Experimental	11	18.00	5.83	+ 2.90
	12	17.28	4.29	+ 2.18 Within
	13	17.16	5.86	+ 2.06 1 STD DEV
	14	19.66	1.52	+ 4.56 Above
	Overall	18.02	4.37	+ 2.92
Experimental	41	17.53	4.42	+ 2.43
	42	14.72	7.31	- .38 Within
	43	15.10	7.37	.00 1 STD DEV
	44	20.00	2.34	- 4.90
	Overall	16.83	5.36	1.73
Placebo	31	17.80	5.05	+ 2.70
	32	16.92	5.83	+ 1.82 Within
	33	18.53	4.87	+ 3.43 1 STD DEV
	34	17.40	5.14	+ 2.30 Above
	Overall	17.66	5.22	+ 2.56
Control	21	15.77	5.75	+ .67
	22	18.50	5.25	+ 3.40 Within
	23	17.50	5.37	+ 2.40 1 STD DEV
	24	15.68	6.10	+ .58 Above
	Overall	16.86	5.61	+ 1.76

*Normative Data \bar{X} = 15.1 STD DEV = \pm 5.6

TABLE 31
Soldier Responses to Questions About Survey Feedback Meetings

Treatment Condition	Were Platoon Meetings Held?		Were Squad Meetings Held?	
	Yes	No	Don't Know	Don't Know
Experimental One	57.7	32.8	12.5	17.2
Experimental Two	46.6	43.2	10.2	14.8
Placebo	70.1	23.4	43.2	11.7

TABLE 32
Soldier Responses to Questions About Action Planning

Treatment	Were Action Plans Developed?			Were Action Plans Carried Out?			Was Your Personal Input Sought?		
	Yes	No	Don't Know	Yes	No	Don't Know	Never	Some- times	Often Always
Exper TR One	34.4	43.8	21.9	23.4	40.6	35.9	46.2	38.5	15.3
Exper TR Two	29.9	44.8	25.3	27.3	44.3	28.4	48.3	40.4	11.2
Placebo	43.4	43.4	13.2	35.6	45.2	19.2	47.3	28.4	24.3

perceive survey feedback meetings as having occurred. In fact, this possibly was the case at squad level for some platoons. The reader will recall that the waterfall down pattern ascribed to in the design required platoon problems to be discussed prior to squad problems. In addition, the unforeseen summer support requirement influenced the post-test schedule such that some squads did not have meetings prior to the post-test. Therefore, the data in Table 31 do not appear to be contradictory to this author's chronology of activities.

Table 32 presents a summary of the soldiers' responses to questions about developing and implementing action plans.

These data show that some action planning did occur, probably at company and platoon level. As the tangible results of action plans may be slow but continuous, it is entirely possible for many soldiers not to know if the plans have been carried out. However, some follow up vehicle to feedback the results appears to be lacking since only 25% of the soldiers knew of any action plans being implemented.

Finally, soldiers indicated that their individual opinions were not sought in action plans to any large extent. Control appears to still be traditionally authoritative, the reader will recall this author's pilot research experience with the fear of losing control in organization effectiveness activities. Such may still be the case in the squad leader and platoon sergeant positions in these units.

Table 33 presents a summary of the soldiers' responses

to questions about perceived unit effectiveness as a result of the intervention activities.

TABLE 33
Soldier Responses to Questions About
Perceived Unit Effectiveness

Treatment Condition	Unit Effectiveness Due to Meetings			Unit More Effective Due to Team Building		
	Yes	No	Don't Know	Yes	No	Don't Know
Exper TR One	26.6	35.9	37.5	32.3	29.3	32.6
Exper TR Two	22.7	52.3	25.0	36.9	22.7	40.4
Placebo	34.7	36.0	29.3	N/A	N/A	N/A

The data show that unit effectiveness is not enhanced greatly by holding meetings. When adding the fact that personal opinions were sought only 50% of the time, it is evident that some soldiers have been critical about how the meetings have been conducted.


Finally, when asked point blank, if team building was an effective intervention 33-37% of the soldiers indicated yes. An equal number were not sure which seems understandable given the time parameters of this study.

DISCUSSION

The discussion section which follows will focus on three main themes: (1) the commitment of the leaders involved in the intervention activities, (2) the influence of the traditional authority structure, the chain of command, can have on intervention programs, and (3) some methodological problems which have come to light as a result of conducting field experimental research in organization development. The reader is cautioned that these comments are subjective observations made from this writer's perspective. The comments are not empirically substantiated, but they are presented to provide the reader with a more complete understanding of the setting in which the change programs occurred.

Commitment of Leaders

Within the military, research involving soldiers cannot be carried out without the expressed consent of the unit commanders involved. The reader will recall that permission was granted by the top leaders of the battalion to allow this research to be conducted within the subordinate company units. No such permission was sought from the company commanders nor the platoon leaders, although the author did spend some time with each company commander to discuss the purpose of the



research. The company commanders and their subordinate leaders were merely informed that (1) two Organization Effectiveness Staff Officers would work within the battalion, and (2) that an outside researcher would evaluate the organization effectiveness activities which occurred.

Permission, then, was guaranteed by the top authority; commitment on the part of company, platoon and squad leaders was never secured. Herein, underlines a critical problem. The nature of survey feedback requires that there be commitment on the part of the participants in order for the process to be a success. The commitment must be overt on the part of the leaders (Clark, 1972), since the waterfall down model encouraged subordinate leaders to emulate the actions of their immediate supervisors. Thus, it is not known how much commitment there was to the success of the change effort in the two experimental treatment conditions and particularly in treatment condition one, where the company commander later decided to resign from the Army.


These comments are not to be taken that no commitment was made in the experimental treatment units. In fact, there was commitment as evidenced by the improvements measured. However, it is doubtful that commitment to the success of the activities was the same at all levels of the experimental units. Further, it seems clear from the platoon analyses reported earlier, that at least one platoon did not share the commitment as intensely as did the other leaders. That is, one

platoon's results were completely opposite of the positive trends noted in the other platoons. Finally, in retrospect, it appears that not enough consideration was given to commitment of the squad leaders. Clearly, as the manipulation check items tend to confirm, some squads did not have their own meetings at the time of the post-test. Therefore, any commitment these groups had could only have been toward platoon and company action plans which may not have had the salience to these persons that more immediate squad level problems did.

The effect which the varying level of commitment to the program activities by some leaders may have on the continued success of the overall effort is not clear. As long as the top leaders within the battalion continue to endorse organization effectiveness activities, it seems that the beneficial impact of the program will persist. This reinforces the military adage that "people do well those things that the boss checks." Conversely, there truly are no real "checks" since the organization effectiveness program is voluntary, and the results are confidential. Therefore, at most, the battalion can only provide a climate of open support for change programs which carry no penalty for risk or failure. Ultimately, it is up to the first level supervisors, the platoon leaders and squad leaders, to continue to implement organization effectiveness activities within their own work settings.

The Chain of Command

The military line of authority commonly called the chain of command emphasizes a traditional authoritative style of leadership where the leader is assumed to be both knowledgeable and experienced in the needs of the subordinates. In past decades this translated into "do what I say because I say so." In recent years the rationale has been modified to a more palatable position of "do what I say because I know what is best for you." Of course, with the general increase in education level of soldiers as well as the ever increasing technological advances incorporated within the military, soldiers no longer believe that one leader knows enough to make decisions without subordinate input. Herein lies a paradox. Platoon leaders, and squad leaders are given responsibility which they are told cannot be shared. In turn, they typically interpret any participatory activity as a threat to the authority and control they believe their positions bestow upon them. The reader will recall an earlier discussion of this problem when it was noted in the pilot research, conducted prior to this study. It appears, in hindsight, that this writer's meetings with company commanders, and the feedback orientations held by the two internal consultants with the company commanders were not enough. The persons who needed the most psychological safety (Alderfer & Ferriss, 1972), were the platoon sergeants and squad leaders. These latter two groups needed assurance that survey feedback and the participative action planning



which followed were not threats to their own authority. The manipulation check data attest to this perceived threat. The reader will recall that almost 50% of the soldiers in both experimental groups indicated that their opinions were seldom or never sought. It seems clear that the style of management called for in survey feedback interventions is still an uncomfortable one for some leaders. The chain of command was a vestige of authority which appeared to be weakened or replaced by this "new fangled" technique called for in survey feedback. Finally, it is easy to underscore the lower level supervisors' close adherence to the chain of command. The squad leaders and platoon sergeants had no real corporal punishment authority. They could not "fire" soldiers. The supervisors could only recommend non-judicial punishment to the company commander or first sergeant who would weigh the recommendation in light of the soldier's own statements. Clearly, in retrospect, the first level supervisors were being asked to give up some power with only the promise of intended work improvements. More attention to preparing this level of supervisors was needed prior to the start of the survey feedback intervention.

Some Methodological Problems in Field Research

The most difficult problem facing a researcher in an actual work setting is control. This problem can be dealt with in two ways: (1) control of manipulation results can be enhanced by a well planned experimental design taking in account what moderating factors can influence findings, (2) control

of exogeneous influences which are unrelated to the hypothesis but have a direct impact on the inferences to be made from the findings. In the former case, a discussion of the controls considered in the design was treated in the methodology section and will also be discussed after the summary under limitations of generalizability. Therefore, it is the second type of control problem which will be discussed here.

Research in actual work settings is victim to a host of exogeneous problems which affect the intended outcomes. Some of the more critical control problems will be identified here.

Summer Support

As soon as the units were identified for the study, the author checked to see what the master training schedule was for the following nine-month period. The overriding concern at that time was to complete the data collection prior to a possible training deployment overseas which would not only make the unit inaccessible for an additional 90 to 120 days, but the training activity itself could have some unintended influences on the results. As it turned out, this organization was not slated to train overseas and as a consequence was given a summer support mission which was divorced from their routine activities. Soon after this change was known, the author decided to administer the post-test prior to the start of summer support training. Two trade-offs were made as a result of this decision: (1) More reliable opinions and

attitudes were captured by giving the post-test during the time when the soldiers were still completing their normal work activities. This positive results enabled this researcher to get a more accurate opinion of soldier responses than to have given the post-test after summer support was over. The reader will recall an earlier discussion of summer support as work details and clean-up details where the soldiers were taken out of their homogeneous units to fill work pools. The details were repetitive, and offered no intrinsic work satisfaction because as one summer group completed the training the support detail had to clean up the area for another group. This was done sixteen times throughout the summer. (2) The adverse consequences of the early post-test was that some squads had not held their meetings and possibly some platoons had not implemented all of their action plans. Therefore, criterion measures might appear to be less sensitive to the changes than if more time were available.

Turnover

Another methodological problem in this field research was the problem of turnover. The research design called for repeated measures of soldier's responses. A large sample is needed for repeated measures given the problem of mortality due to absence and turnover. Initially, the author was elated to have a battalion available, but, the reader will recall that almost 100 pre-test soldiers' responses could not be matched with post-test answers, and therefore, were not

included in the analysis. Care was taken to insure that individual identification codes would be used. However, in order to preserve anonymity only each respondent knew his own code. Obviously, some had forgotten the codes by the post-test, and their data were lost. Also, a company commander, in one of the two experimental treatments announced in May that he planned to resign from the Army at the end of July. This decision was totally unforeseen, and one can but speculate as to what effect his announcement had on the intervention activities operating in that experimental unit.

Testing Effects

A third methodological problem found late in the research is the problem of testing. Not only were the intervention measures taken, but it was also revealed that a Leadership Opinion Survey was given to all of the officers preceding the pre-test of this study. Moreover, an earlier version of the General Organizational Survey was given in September, 1976, as part of an attempt to validate that instrument Army wide. Finally, it was revealed that the Army Research Institute had conducted a small, random survey on the subject of soldier retention in the Army. Thus, it is intuitively clear that there had to be some effect of testing operating in this organization. It is also easy to see that soldiers could have a low expectation of any improvement as result of the survey feedback, because they had previously been sensitized to answering

national surveys which provided no feedback of results.

Statistical Conclusion Validity

The last methodological problem to be addressed is what Campbell and Cook (1976) describe as statistical conclusion validity. Most readers are already familiar with the paucity of empirical field research in organization development, and the research which has been done, Bowers (1973) notwithstanding, has typically employed small samples taken from one or two departments of a larger organization. Unfortunately, the results of organization development research often conclude that in a hypothesis test, say using an analysis of variance, that there is no difference among criterion means. This decision is based upon the arbitrary statistical traditions which have developed for drawing conclusions about covariation from sample data. The most popular tradition is the cut off point of $p \leq .05$. Relationships below the five percent level are treated as though they are true while those above it are treated as though they are unsubstantiated. Thus, the traditional $p \leq .05$ level of confidence has been reified as the truth. This author does not quarrel with convention if it is understood a priori that the purpose of a particular piece of research is to determine the mere existence of effects. This is often the case in laboratory experimentation where the investigator simulates an actual setting and has control over manipulations.

However, it is the position of this author that the bulk of the phenomena of interest to organization development researchers in field research is more grossly distributed among small and medium effects, control of which is limited due to the presence of many moderating and intervening variables. Therefore, the likelihood of finding a significant relationship in organization development field research is not very high even when a meaningful difference does exist in the population.

The author will discuss some reasons for not finding more significant results using the hindsight of this particular research experience. Within actual work settings true randomization of subjects and work groups is in practice not possible. The researcher would need access to the entire universe for such a selection to occur, and equally important, the monetary and time costs to orchestrate effectively such an endeavor would be prohibitively high. Therefore, randomization is at best, accomplished for subgroups where possible, or as was the case here, true randomization was not possible at all. Herein lies a critical problem of research in field settings. Bias systematically affects the values of the measures taken. This is because not all possible suppressor variables can realistically be considered and controlled in the study. Yet, statistical conclusion validity considers the biases as part of the sources of error variance. But, in reality the effects of biases are not random, and thus, are not truly a source of error variance.

Another reason for not finding more statistically significant findings is the lack of appropriate statistical power. Power is usually discussed as a function of three parameters: (1) level of significance, (2) estimated effect size, and (3) sample size. By increasing one of the three parameters while holding the other two constant leads to an increase in power (Barkley, 1977). Convention and professional acceptance used in research dictates that the level of significance be $\leq .05$. As a result, tests greater than .05, say .06 to .10 may or may not be accepted as significant, and tests where the probability level is .10 to .25 typically are not considered significant. What this pattern of acceptance suggests is that all tests of significance have equal consequence (type I error) in research. What this author would suggest based on this research experience is that for some tests, the researcher should consider a priori departing from conventional levels of significance and adopt more liberal levels of alpha when testing some variables in field research. In doing so, the researcher runs the risk of having more type II errors (failing to reject H_1 when H_1 is false). But it is this trade off of accepting type two errors as opposed to reporting no changes because the significance level was not $\leq .05$. The reader will recall that changes were found for the variable Intergroup Relations, but the changes were not statistically significant using the conventional level $\leq .05$. Nevertheless changes did occur, and the changes were not significant because they did not reach the levels predicted. Because more exact research about

estimating effect size is still lacking in the literature, the measured change for the variable Intergroup Relations must be considered not significant.

Finally, hindsight provides the insight that conventional significance may not have been found in more of the variables simply because the sample size was too small. That is, when the unit of analysis was the company, and changes over time were small, one would need possibly as many as four more battalions to increase statistical power. Such a sample demand could not be foreseen in advance since there is no benchmark given in the literature about how much change could realistically be predicted as a result of the experimental manipulations.

In spite of the methodological problems just described the improvements reported in some of the dependent measures provide strong evidence that survey feedback can have positive effects within organizational settings. How much improvement and under what optimal conditions is the need for additional field research in this area.

SUMMARY

The purposes of this section are threefold. First the findings of the results section will be summarized. Second, limitations on the generalization of these findings will be made. Third, some implications for the Army will be made.

Summary of Major Findings

In terms of work project efficiency, statistically significant improvements did occur in the two units which participated in the survey feedback manipulations for one of the three types of projects measured. Improvement was also noted in the placebo unit for the same type of project. This positive outcome may be a result of better work relationships which were the result of race relations seminars. No change occurred in the control unit's level of efficiency. There was no efficiency improvement in any of the treatment conditions for type two and type three projects in this study.

Regarding soldiers' affective responses to work two statistically significant findings were noted. First, in the criterion measure of General Satisfaction, there was a statistically significant decline for one of the two units which participated in the survey feedback intervention. The measured decline occurred soon after that unit commander unexpectedly announced that he was resigning from the Army. Improvement was

noted in the second unit participating in the survey feedback intervention, but the measured increase was not statistically greater than the improvement noted in the placebo unit. The control condition had a negative change in general satisfaction. The second positive change noted in soldier's attitudes was found in the Specific Satisfaction measure. Both of the survey feedback units reported improvements. However, neither experimental treatment was statistically greater than the control conditions.

No statistically significant changes occurred among the treatment conditions when Intergroup Relations was measured. One survey feedback unit improved; the other declined but not significantly so. Some improvement in Intergroup Relations was also noted in the placebo unit, but this was probably due to the better communications facilitated by the race relations meetings. No improvement took place in the no treatment control condition.

Statistically significant changes occurred in the two survey feedback units regarding one of the two measures of Supervisory Consideration. One group participating in survey feedback experienced a significant decline while the other experimental group's scores improved significantly for the variable - Consideration Given (Now). The fact that significant changes occurred only within the two survey feedback units is testimony that meetings were being held. However, the contrast in outcomes appears to suggest that both groups were not equally satisfied with the amount of consideration which was

TABLE 34

Summary of Overall Significant Improvement by
Each Criterion Measure

Dependent Measure	Treatment Condition			Control
	Expr Tr 1	Expr Tr 2	Placebo	
Work Efficiency:				
Type 1 Projects	Improved*	Improved*	Improved	No Change
Type 2 Projects	No Change	No Change	No Change	No Change
Type 3 Projects	No Change	No Change	No Change	No Change
Affective Resp. to Work:				
General Satis.	Declined**	Improved	Improved	Declined
Specific Satis.	Improved	Improved	Improved	Declined
Intergroup Rel.	Improved	Declined	Improved	Declined
Supervisory Cons:				
Cons. (Now)	Declined**	Improved*	Declined	Improved
Cons. (Wanted)	Improved	Improved	Improved	Improved

* Improvement was statistically significant $p \leq .05$

** Decline was statistically significant $p \leq .05$

given. It is this author's contention that one experimental group chose to deal with the lack of supervisory consideration and as a result this unit reported an improvement. However, the leadership style of the second unit's leaders caused soldiers to perceive these leaders as less supportive of their subordinates. That is, this unit held feedback meetings but limited the involvement of the soldiers in the discussion and planning of how to deal with the problems identified. Thus, they desired more consideration. In the second measure Supervisory Consideration (Wanted), the survey feedback unit which reported earlier improvement in Supervisory Consideration (Now), reported a significant decline in more consideration wanted. More specifically, as the soldiers' needs for consideration were satisfied, their demand for that need measured by Consideration (Wanted) declined. There were no significant changes among the other three treatment conditions. Table 34 provides a summary of all significant improvements by each criterion measured.

In addition to the measures just described, exploratory research investigated the relationship of absence rates, rates of punishment, and reenlistment changes as results of survey feedback programs. No significant changes were noted across treatment conditions when these variables were measured over time. It appears that military absences were not reduced by providing soldiers with more opportunities for participation in their work. Other factors unrelated to the survey feedback processes such as separation, monetary indebtedness, immaturity

in age, etc. overshadow the soldier's reasonable judgment not to go AWOL. Moreover, many punishments imposed have been as a result of unauthorized absences; therefore, the rate of punishment will probably not decline unless absenteeism does so first. More research is needed into the causal relationship between absenteeism and punishment within the military. Reenlistment data was too small to measure during the time period, and therefore was not reported.

Some attention was given to the relationship of moderating variables and their possible impact on survey feedback outcomes in military work settings. First, the presence or the lack of experienced psychological states of work meaningfulness, work responsibility, and feedback from the job itself were measured for all treatment units in this study. No significant relationship was found between the nature of the work, job dimensions, and experienced psychological states. Therefore, no test of the effect of the later variable was made in the study since a preliminary test did not indicate that it varied among treatment units.

Higher Order Needs of soldiers was also measured to determine if soldiers wanted to satisfy their needs through their work. No significant relationship was found. Finally, leadership style was examined to see if the two survey feedback units would have dissimilar outcomes as a result of the style of leadership practiced by the commander. No difference between leadership styles especially regarding subordinate consideration was found.

Limitations on Generalizability of These Findings

The reader will recall that this research took place in a military setting which tends to operate as a quasi-closed community. Therefore, there are limitations which dictate that some caution be exercised in generalizing the findings reported here to other settings. The limitations to follow are discussed in terms of threats to external validity discussed by Campbell and Stanley (1963) and Cook and Campbell (1976).

The first threat to external validity is the possible interaction of testing and the treatment under study. In this research, a repeated measures analysis is used to test the specific hypotheses under study. The obvious question which arises from such an analysis is whether similar results would be obtained if the soldiers were only given a post-test after the intervention manipulations had occurred. Campbell and Stanley recommend that a post-test only control group is necessary to determine the interactive effect of testing with treatment manipulation. In this study no additional homogeneous groups were available to represent a post-test only condition. There were several other companies available, but the soldiers did not perform similar work tasks; thus, no post-test comparison would be meaningful. There were other tests ongoing at the site during the past twelve months which included the soldiers from this unit. These activities were beyond this researcher's control as discussed earlier. Clearly the tests had consequences to the internal validity of the results. In

sum, the threat of interaction of testing and experimental manipulations cannot be dismissed in this study.

A second threat to the external validity of this study concerns the possible interaction of selection and treatment. This threat is real in this research. The very nature of Army organization effectiveness programs requires that the units voluntarily select themselves to participate in intervention activities. The findings reported here could well be different in other settings. Cook and Campbell (1976) suggest that whenever the conditions of recruiting participants are systematically selective, the findings are applicable only to these categories of persons.

A third possible limitation of the findings reported here is the interaction of setting and treatment. Specifically, can a causal relationship obtained in a military setting also be obtained in an industrial organization in the private sector? Cook and Campbell note that the refusal rate of getting cooperation of industrial organizations, school systems, etc. is nearer to 75% than 25% especially if these organizations were never previously contacted because it was certain they would refuse. Clearly this was not the case in this study. As noted earlier in the discussion, permission was obtained from above, and companies were informed that they would participate. Because the outcome of this research could be different if it were done in private industry, what is needed is replication of this research using the same surveys across experimental settings.

In summary, assessing external validity is an inductive process. One cannot extrapolate with any precision from small samples of persons, settings, and time to all possible persons, settings and time frames. However, there are many subgroups of persons, settings, and time across which generalizations can be potentially made. Ultimately, the best criteria of expanding generalizability is to replicate the design using other persons and settings at different times. In so doing, the general library of knowledge will continue to grow, and a more complete understanding of the effects of interventions will be obtained.

Possible Implications for Army Use

The recommendations which follow about the practical implications of the research in the Army are based upon observations which have been made by an experienced researcher in organization effectiveness. In spite of this writer's objective sincerity, the comments must be viewed with some caution because they obviously reflect this author's perspective.

The data reported in this study followed a classical evaluation research approach. That is, the intent of the research was to measure the effects of survey feedback against the goals it set out to accomplish (i.e., to improve work efficiency, job satisfaction, and better work relationships). The study reported the outcomes as they actually occurred.

However, if the charter of this research was to conduct an evaluation which could serve as a demonstration project of

the positive effects of survey feedback, then four changes in the design and implementation of the program would be recommended.

These four changes serve as practical recommendations for the use of survey feedback in military settings.

The first recommendation is to isolate the units which will be involved in the research. Archer (1975) describes this isolation approach as a sheltered experiment. That is, the object is to throw a shelter around the organization, which will allow survey feedback to develop in the manner called for in the design. In contrast to the study just reported, unintended outside requirements, additional work demands, and atypical work support duties would not be imposed upon units involved in the survey feedback intervention. The isolation would significantly enhance the probability of diagnosing meaningful work problems which the participants themselves can change, as well as reduce the amount of time which may be devoted to diagnosing work problems whose causal origin are beyond the control of the units.

Isolation would also include the elimination of outside surveys and testing. That is, the units involved in survey feedback would not be subjected to other Army surveys during the evaluation period. One of the important phases of survey feedback is the opportunity for the participants to own the data. If the soldiers are asked their opinion in surveys which provide no intended feedback, then two possible negative

effects occur: (1) the soldiers have raised expectations about obtaining results from the survey which are not fulfilled, and (2) the soldiers do not develop trust that any improvements will result from their participation in surveys.

Finally, isolation should include stabilizing the individuals who occupy the key leadership positions in the units involved in the survey feedback process. Problems of turnover of key persons can effect the conduct of meetings in the feedback process. That is, when meetings are run by the relevant work groups, stability of key persons is necessary for meaningful interaction to occur between peers and their supervisors and supervisors and their subordinates. Personal turbulence disrupts this critical pattern of interaction and could reduce the intended success experiences which the meetings are designed to provide.

The second recommendation made to optimize the positive effect of survey feedback is to revise the General Organizational Survey used by the Army. That is, the instrument should be designed such that a few criteria can be measured effectively as opposed to trying to measure too many variables. Instrument validation is a time involved process which admittedly could take years to accomplish. Nevertheless, two general guidelines should be used: (1) The instrument should provide an opportunity for the leaders to learn what they want to know about their units, and (2) the instrument should allow the soldiers to express what they think the perceived

problems of the unit are. Once these objectives are met, the survey instrument will be tailored to each organization's problems.

The third recommendation suggested here is to have the evaluator shadow the activities of the internal consultant. This means that the evaluator would observe the intervention activities and meet with the consultant after each appropriate phase to discuss what had taken place, and where the unit is going in its next steps. The evaluator as a shadow offers two strengths to the intervention: (1) he is an objective source of information, who as a disinterested observer, can note some patterns of behavior which the client unit or the consultant may not readily see. (2) the evaluator is an additional resource person to the internal consultant who is available throughout the intervention program.

The last recommendation about the practical use of survey feedback is to differentiate between the intervention entry level and the intervention working level. Within the Army, permission for activities to occur within a command requires the approval of the commander. The entry level of intervention within the Army is at the battalion. Thus, the battalion commander must approve activities which are planned within subordinate elements of that command. However, in survey feedback, the bulk of the data generated for action comes from the working level of the squads and platoons. Therefore, internal consultants need to spend time with squad leaders and

platoon leaders to legitimize this process to them, since these leaders are the ones who will be most intimately involved in the intervention program. Too often, military officers, who are the internal consultants, tend to devote their time and emphasis with the higher ranking personnel within a battalion. It is more desirable to devote time with higher ranking personnel for the entry phase but, their focus must shift to the working levels, squad leaders and platoon leaders, to enhance the intervention's chances of success. Consideration of these four recommendations should enhance the probability of obtaining desired outcomes using survey feedback in military settings.

REFERENCES

REFERENCES

- Alderfer, C.P. Boundary Relations and Organizational Diagnosis, District of Columbia Psychological Association. Paper, November 1974. Also printed in Welk (Ed.), Humanizing Organizational Behavior, 1976.
- Alderfer, C. Change Process in Organizations. In M. Dunnett (Ed.). Handbook of Industrial and Organizational Psychology. Chicago: Rand McNally, 1976, pp. 1591-1638.
- Alderfer, C.P. Convergent and Discriminant Validation of Satisfaction and Desire Measures by interviews and Questionnaires, JASP, 1967, 51, pp. 509-520.
- Alderfer, C.P. and Ferriss, R. "Understanding the Impact of Survey Feedback", in W.W. Burke and H.A. Hornstein (Eds.) The Social Technology of Organizational Development. Fairfax, Virginia: NTL Learning Resources Corporation, 1972, pp. 234-243.
- Archer, J.T. Achieving Joint Organizational, Technical, and Personal Needs: The Case of the Sheltered Experiment of Aluminum Casting Team. In L. Davis and A. Cherns (Eds.), The Quality of Working Life, Vol. 2, New York: The Free Press, 1975, pp. 253-269.
- Argyris, C. T-groups for organizational effectiveness. Harvard Business Review, Vol. 42, No. 2, 1962, pp. 60-64.
- Argyris, C. Intervention Theory and Method. Reading, Mass.: Addison-Wesley, 1970.
- Argyris, C. Management and Organizational Development: The Path from XA to YB. New York: McGraw-Hill, 1971.
- Argyris, C. Private Interview with a Consultant (Telephone Interview). November 1975.
- Barkley, W. M. An Approach to Statistical Power Useful with Small Sample Sizes. Unpublished Paper, Purdue U., West Lafayette, Indiana, Spring, 1977.

- Barnes, L.B. Organizational Change and Field Experimental Methods, In V. Vroom (Ed.), Methods of Organizational Research. University of Pittsburg Press, 1964.
- Baumgartel, H. Using Employee Results for Improving Organizations, Kansas Business Review, 1959, pp. 2-6.
- Bayles, R.F. Interaction Process Analysis. Cambridge, Mass: Addison-Wesley, 1950.
- Beckhard, R. The Confrontation Meeting, Harvard Business Review, 45, No. 2, 1967.
- Beckhard, R. Organization Development: Strategies and Models. Reading, Mass: Addison-Wesley, 1969.
- Bechnor, R.L, Weet, O., Evensen, P., and Melnick, J. Empirical Guidelines for Group Therapy: Pretraining, Cohesion, and Modeling, JABS, Vol. 10, No. 2, April-June 1974, pp. 149-165.
- Beer, M. and Huse, E. F. A. A Systems Approach to OD, JABS, Vol. 8, No. 1, 1972, pp. 79-101.
- Beer, M. The Technology of OD in M. Dunnette (Ed.), Handbook of Industrial & Organizational Psychology. Chicago: Rand McNally, 1976, pp. 937-993.
- Benedict, B.A., Calder, P.H., Callahan, D.M., Hornstein, H.A. & Miles, M.B. The Clinical-Experimental Approach to Assessing Organizational Change Efforts, JABS, Vol. 3, pp. 347-380.
- Bennis, W.G. Theory and Method in Applying Behavioral Science to Planned Organizational Change, JABS, Vol. 1, No. 4, October-December 1975, pp. 337-360.
- Bennis, W.G. Organization Development, Its Nature, Origins, and Prospects. Reading, Mass.: Addison-Wesley, 1969.
- Bennis, W.G., Benne, K.D. & Chin, R. The Planning of Change. New York: Holt, Rinehart, 1969.
- Berrien, F.K. A General Systems Approach to Organizations, in M.D. Dunnetti (Ed.), Handbook of Industrial and Organizational Psychology. Chicago: Rand McNally, 1976.
- Bertalanffy, L. von. The Theory of Open Systems in Physics and Biology, Science, Vol. 3, 1950.

- Blake, R.R. & Mouton, J.S. Reactions to Intergroup Competition Under Win/Lose Conditions, Management Science, Vol. 1, 1961, pp. 420-435.
- Blake, R & Mouton, J.S. Overevaluation of Own Group's Product in Intergroup Competition, JASP, Vol. 64, 1962, pp. 237-238.
- Blake, R.R. & Mouton, J.S. Comprehension of Points of Commonality in Competing Solutions, Sociometry, Vol. 25, 1962, pp. 56-63.
- Blake, R.R., Shephard, J.S. and Mouton, J.S. Managing Intergroup Conflict in Industry. Houston, Texas: Gulf Publishing, 1964.
- Blake, R.R., Mouton, J.S., and Sloma, R.L. The Union Management Intergroup Laboratory: Strategy for Resolving Intergroup Conflict, JABS, Vol. 1, No. 1, pp. 25-27.
- Blalock, H.M. and Blalock, A.B. Methodology in Social Research. New York: McGraw Hill, 1968.
- Bowers, D. G. OD Techniques and Their Results in 23 Organizations, the Michigan ICL Study, JABS, Vol. 9, 1973, pp. 21-43.
- Bowers, D.G. and Franklin, J.L. Survey-Guided Development: Using Human Resources Measurement in OD, Journal of Contemporary Business, Summer 1972, pp. 43-55.
- Box, G.E.P. "Some Theorems on Quadratic Forms Applied in the Study of Analysis of Variance Problems", The Annals of Mathematical Statistics. Volume 25, 1954, pp. 290-302, 44-498.
- Brown, L.D. Research Action: Organizational Feedback, Understanding, and Change, JABS, Vol. 8, No. 6, 1972, pp. 697-712.
- Buchannan, P.C. Laboratory Training and Organization Development, ASQ, Vol. 14, 1969, pp. 466-480.
- Chase, P. A Survey Feedback Approach to Organization Development, in Proceedings of the Executive Study Conference, Princeton: ETS, 1968.
- Clark, A.W. Sanction: A Critical Element in Action Research, JABS, Vol. 8, 1972, pp. 713-731.

- Corey, S. M. Action Research to Improve School Practices. New York: Bureau of Publications, Teachers College, Columbia University, 1953.
- Cornfield, J. and Tukey, J.W. "Average Values of Mean Squares in Factorials," The Annals of Mathematical Statistics, 26, 1956.
- Cronback, J., Gleser, G., Nanda, H., and Rajartnam, N. The Dependability of Behavioral Generalizability for Scores and Profiles. New York: Wiley, 1972.
- Dalton, G.W. Influence and Organizational Change, in G.W. Dalton and P.R. Lawrence (Eds.), Organization Change and Development. Homewood, Illinois: Dorsey, 1970.
- Davis, L.E., Canter, R.R. and Hoffman J. Current Job Design Criteria, Journal of Industrial Engineering, Vol. 6, No. 2, 1955, pp. 5-11.
- Davis, L. and Cherns, A. The Quality of Working Life, Vol. 1, New York: The Free Press, 1975.
- Davis, L.W. and Taylor, J.C. Design of Jobs. New York: Penguin Books, 1966.
- Deutch, M. The Effect of Motivational Orientation Upon Trust and Suspicion, Human Relations, Vol. 13, 1960, pp. 123-139.
- Deutch, M. Conflicts: Productive and Destructive, Journal of Social Issues, Vol. 25, 1969, pp. 7-41.
- Deutch, M. and Krauss, R.M. The Effect of Threat Upon Interpersonal Bargaining, JASP, Vol. 61, 1960, pp. 181-189.
- Digman, J.M. Interaction and Non-Linearity in Multivariate Experiment. R.B. Cattell, (Ed.), Handbook of Multivariate Experimental Psychology. Chicago, Rand McNally, 1966.pp
- Downs, A. Inside Bureaucracy. Boston: Little and Brown, 1967.
- Duncan, R.B. Characteristics of Organizational Environments and Perceived Environmental Uncertainty, Administrative Science Quarterly, Vol. 17, No. 3, 1972, pp. 313-327.
- Dutton, J.M., and Walton, E. Interdepartmental Conflict and Cooperation: Two Contrasting Studies, Human Organization, Vol. 25, 1965, pp. 207-220.

- Emery, F.E. and Trist, E.L. Socio-Technical Systems, in C.W. Churchman and M. Verhulst (Eds.), Management Sciences: Models and Techniques, Vol. 2, London: Pergamon Press, 1960, pp. 83-98.
- Emery, F.E and Trist, E.L. The Causal Texture of Organizational Environments, in J.G. Maurer (Ed.), Readings in Organization Theory: Open-Systems Approaches, New York: Random House, 1971, pp. 46-57.
- Ferguson, C.K. and Kelley, H.H. Significant Factors in Over-evaluation of Own Group's Product, JASP, Vol. 69, 1969, pp. 223-228.
- Ford, Robert N. Job Enrichment Lessons from AT&T, Harvard Business Review, January-February 1973, p. 96.
- Fordyce, J.K. and Wall, R. Managing with people: A Manager's Handbook of Organization Development Methods, Reading, Mass: Addison-Wesley Company, 1971.
- Freedman, A. Personal Interview with a Consultant, Nov., 1975.
- French, W. Organization Development Objective, Assumptions, and Strategies, California Management Review, Vol. 12, (Winter 1969), pp. 23-34.
- French, W. and Bell, C. Organization Development: Behavioral Sciences Interventions for Organization Improvement. Englewood Cliffs, New Jersey: Prentice Hall, 1973.
- Friedlander, F. A Comparative Study of Consulting Processes and Group Development, JABS, Vol. 4, No. 4, 1968, pp. 337-400.
- Friedlander, F. and Brown, L. Organization Development, Annual Review of Psychology, Vol. 25, 1974, pp. 313-341.
- Friedlander, F. OD Reaches Adolescence: An Exploration of Its Underlying Values, JABS, Vol. 12, No. 1, 1976, pp. 7-21.
- Frohman, M., Welsbord, M. and Johnson, J. Turnover Study and Action Program, Unpublished Report, Marion Station, Pa.: Organization Research and Development Co., 1971.
- Frohman, M.A. Sashkin, M. and Kavanagh, M.J. Action Research as Applied to OD, Organization and Administrative Sciences, Vol. 7, No. 1-2, Spring-Summer 1976, pp. 129-161.

- Fromkin, H.L., Brandt, J., King, D.C., Sherwood, J.J. and Fisher, J. An Evolution of Human Relations Training for Police, Krannert Paper, No. 469, Purdue University, 1974.
- Golembewski, R.T. and Blumbert, A. Sensitivity Training and the Laboratory Approach. Itasca, Ill.: Peacock, 1970.
- Golembewski, R. and Munzenrider, R. Social Desirability as an intervening Variable in Interpreting OD Effects, JABS, Vol. 11m No. 3, 1975, pp. 317-332.
- Goodstein, L.D. and Boyer, R.K. Crisis Intervention in a Municipal Agency: A Conceptual Case History, JABS, Vol. 8, No. 3, 1972.
- Greiner, L.E. Antecedents of Planned Organization Change, JABS, Vol. 3, No. 1, 1967, pp. 51-85.
- Guest, R.H. Men and Machines: An Assembly-line Worker Looks at his Job. Personnel, Vol. 31, 1955, pp. 496-503.
- Hackman, J.R. On the Coming Demise of Job Enrichment, Technical Report #9, Department of Administrative Sciences, Yale University, 1974.
- Hackman, J.R. and Oldham, G.A. The Job Diagnostic Survey: An Instrument for Diagnosis of Jobs and the Evaluation of Job Redesign Projects, Technical Report #4, Department of Administrative Sciences, Yale University, May 1974.
- Harr, J.E. We Need More Fermedas. Comments on the Preceding Article by Walton, JABS, Vol. 6, No. 4, 1970, pp. 490-494.
- Harrison R. Choosing the Depth of Organizational Intervention, JABS, Vol. 6, No. 2, 1970, pp. 181-202.
- Herbst, P.G. Socio-technical Design Strategies In Multidisciplinary Research, London: Tavistock Publications, 1974.
- Herzberg, F. Work and the Nature of Man. Cleveland: The World Publishing Co., 1966.
- Herzberg, F.L., Mauser, B., and Snyderman, B. The Motivation to Work. New York: Wiley, 1959.
- Hill, P. Towards a New Philosophy of Management. New York: Barnes and Noble Books, 1971.
- Horst, P. An Overview of the Essentials of Multivariate Analysis Methods, in R.B. Cattell (Ed.), Handbook of Multivariate Experimental Psychology, Chicago, Rand McNally, 1966, pp.

- Hulin, C.L. Individual Differences and Job Enrichment: The Case Against General Treatments, in J.R. Maher (Ed.), New Perspective in Job Enrichment. New York: von Nostrand Reinhold Co., 1971, pp. 158-191.
- Hulin, C. and Blood, M. Job Enlargement, Individual Differences and Worker Responses, Psych. Bulletin, 1968, pp. 41-55.
- Hulin, C.L. and Smith, P. An Empirical Investigation of Two Implications of the Two-Factor Theory of Job Satisfaction, Journal of Applied Psychology, October 1967, p. 396.
- Jacobs, C.D. Job Enrichment of Field Technical Representatives - Xerox Corporation, in L. Davis and A. Cherns (Eds.), The Quality of Working Life, Vol. 2, New York: The Free Press, 1975, pp. 285-300.
- Janis, I.R. and Katz, D. The Reduction of Intergroup Hostility: Research Problems and Hypotheses, Journal of Conflict Resolution, Vol. 3, 1959, pp. 85-100.
- Jaques, E. The Changing Culture of a Factory. London: Dryden, 1951.
- Jenks, R.S. An Action Research Approach to Organizational Change, JABS, Vol. 19, No. 6, pp. 131-150.
- Johns, E.A. The Sociology of Organizational Change. Oxford: Pergamon Press, 1973.
- Jurkovich, R. A Core Typology of Organizational Environments, Administrative Science Quarterly, Vol. 19, No. 3, 1974, pp. 380-394.
- Kahn, R.L. OD: Some Problems and Proposals, JABS, Vol. 10, No. 4, October-December 1974, pp. 485-502.
- Katz, D. and Kahn, R.L. The Social Psychology of Organizations. New York: Wiley, 1966.
- Ketchum, L.D. A Case Study of Diffusion, in L. Davis and Cherns (Eds.), The Quality of Working Life, Vol. 2, New York: The Free Press, 1975, pp. 138-165.
- Klein, S., Kraut, A., and Wolfson, A. Employee Reactions to Attitude Survey Feedback: A Study of the Impact of Structure and Process, ASQ, Vol. 16, No. 4, 1971, pp. 497-514.
- Kolb, D.A. and Frohman, A.L. An Organization Development Approach to Consulting, Sloan Management Review, 1970

- Lawler, E.E. Job Design and Employee Motivation, Personnel Psychology, Vol. 22, No. 4, Winter 1969, pp. 426-435.
- Lawler, Hackman, and Kaufman. Some Effects of Job Redesign: A Field Experiment Journal of Applied Social Psychology #3, 1973, pp. 49-62.
- Lawrence, P.R. and Lorsch, J.W. Organization and Environment. Cambridge, Mass: Harvard University, 1967.
- Lawrence, P.R. and Lorsch, J.W. Developing Organizations: Diagnosis and Action, Reading, Mass.: Addison-Wesley Publishing Co., 1969, pp. 24-25.
- Leavitt, H.J. Applied Organizational Change in Industry: Structural Technological and Humanistic Approaches, in J.G. March (Ed.), Handbook of Organizations, Chicago: Rand McNalley, 1965.
- Levinson, D.J. The Intergroup Relations Workshop: Its Psychological Aims and Effects, Journal of Psychology, Vol. 38, 1954, pp. 103-126.
- Lewicki, R.J. and Alderfer, C.P. The Tensions Between Research and Intervention in Intergroup Conflict, JABS, Vol. 9, 1973, pp. 424-449, Comments, pp. 450-468.
- Lewin, K. Action Research and Minority Problems, Journal of Social Issues, Vol. 2, 1946, pp. 34-46.
- Lewin, K. Frontiers in Group Dynamics, Human Relations, Vol. 1, 1947, pp. 5-42.
- Lippitt, R., Watson, J. and Westley, B. The Dynamics of Planned Change. New York: Harcourt, Brace and World, 1958.
- Lipshitz, Ranaan. The Effects of Third Party Process Interventions into Simulated Organizations as a Function of the Consultant's Prestige and Style of Intervention, Unpublished Dissertation, Purdue University, May 1976.
- Lorsch, J.W. and Lawrence, P.R. Organization Design. Homewood, Illinois: Richard D. Irwin, Inc., 1970, p. 6.
- Luthans, F. and Khod, E. Critical Factors in Job Enrichment, in W.W. Soujanen, et al., (Eds.), Perspectives on Job Enrichment and Productivity. Atlanta: Publishing Services Division, Georgia State University, 1975, pp. 71-86.

- Lytle, W.O., Jr. A Smart Camel May Refuse that Last Straw: A Case Study of Obstacles to Job and Organization Design in a New Manufacturing Operation, in L. Davis and A. Cherns (Eds.), The Quality of Working Life, Vol. 2. New York: The Free Press, 1975, pp. 110-137.
- Maher, J.R. New Perspectives in Job Enrichment. New York: Van Nostrand Reinhold, 1971.
- Mann, F. Studying and Creating Change: A Means to Understanding Social Organizations, in Bennis, Benne, and Chin (Eds.), The Planning of Change. New York: Holt, Rinehart & Winston, 1961.
- March, J.G. and Simon, H.A. Organizations. New York: John Wiley & Sons, Inc., 1958, pp. 122-128.
- Margulies, N. and Wallace, J. Organizational Change Techniques and Applications. Glenview, Illinois: Scott Foresman & Company, 1973.
- Miles, M.B., Hornstein, H.A., Callahan, D.M., Calder, P.H. and Schiavo, R.S. The Consequence of Survey-Feedback Theory and Intervention, in W.G. Bennis, K.D. Benne, and R. Chin (Eds.), The Planning of Change. 2nd Ed., New York: Holt, 1969, pp. 457-467.
- Miller, E.J. Technology, Territory and Time. Human Relations. Vol. 12, No. 3, 1959.
- Myers, M.S. Who are Your Motivated Workers? Harvard Business Review. January-February 1964, p. 73.
- Neff, F. Survey Research: A Tool for Problem Diagnosis and Improvement in Organizations, in A. Goulder and S. Miller (Eds.), Applied Sociology: Opportunities and Problems. New York: The Free Press, 1965, pp. 23-38.
- Nemiroff, P.M. The Impact of Individual, Task and Organization Structure Variables on Task Effectiveness and Human Fulfillment at a Continuous Automated-Flow Production Site: A Contingency Approach. Unpublished Doctor Dissertation, Purdue University, May 1975.
- NICB. Behavioral Science Concepts and Management Application. No. 216. New York: The National Industrial Conference Board, Inc. 1976.
- Orne, M. On the Social Psychology of the Psychological Experiment, with Particular Reference to Demand Characteristics and their implications. American Psychologist, Vol. 17, 1962, pp. 776-783.

- Pasmore, W.A. Diagnosing Organizations for Behavioral Science Interventions. Unpublished, Purdue University, May 1975.
- Paul, W.J. and Robertson, K.B. Job Enrichment and Employee Motivation. London: Gower Press Ltd., 1970.
- Pearson, E.S. and Hartley, H.O. Biometrika Tables for Statisticians. London, Cambridge Univ. Press, Vol. 1, 1954
- Porter, L.W. and Lawler, E.E. Managerial Attitudes and Performance. Homewood, Ill.: Richard D. Irwin, Inc. 1968.
- Rice, A.K. Productivity and Social Organization. London: Tavistock Publications, 1963.
- Rice, A.K. The Enterprise and its Environment. London: Tavistock Publications, 1963.
- Rosenthal, R. Experimenter Effects in Behavioral Research. New York: Appleton, Century & Crofts, 1966.
- Rubin, I. The Reduction of Prejudice Through Lab Training, JABS, Vol. 3, pp. 29-49.
- Sashkin, M., Morris, W.C., and Horst, L. A Comparison of Social and Organizational Change Models, Psychological Review. Vol. 80, No. 6, 1973, pp. 510-526.
- Schein, E.H. Process Consultation: Its Role in OD. Reading, Mass.: Addison-Wesley, 1969.
- Schein, E. and Bennis, W. What is Laboratory Training, in D.R. Hampton, C.E. Summer and R.A. Weber (Eds.), Organizational Behavior and the Practice of Management, Glenview, Illinois: Scott, Foresman & o., 1973.
- Schneider, J. and Locke, E.A. Critique of Hersberg's Incident Classification System and a Suggested Revision, Organizational Behavior and Human Performance, July 1971 p. 441.
- Seiler, J.A. Systems Analysis in Organization Behavior. Homewood, Illinois: Irwin and Dorsey, 1967.
- Sherif, M. (Ed.), Intergroup Relations and Leadership. New York: Wiley, 1962.
- Shepard, H.A. Changing Interpersonal and Intergroup Relations Organizations, in J.G. March (Ed.), Handbook of Organizations, Chicago: Rand McNally, 1965, pp. 1115-1143.

- Sherwood, J.J. An Introduction to Organization Development, Experimental Publication System, Washington, D.C.: American Psychological Association, 1971, (April), No. 11 MS. No. 396-1. Also reprinted in Golembiewski, R.T. and Blumberg, A. (Eds), Sensitivity Training and the Laboratory Method. (2nd Ed.), Itasca, Illinois: F.E. Peacock, 1973.
- Sherwood, J.J. An Action Research Model, Unpublished Handout, Purdue University, November 1973.
- Sherwood, J.J. and Glidewell, J.C. Planned Renegotiation: A Norm-Setting OD intervention, in W.W. Burke (Ed.), Contemporary Organization Development: Conceptual Orientations and Interventions. Washington, D.C.: NTL Institute for Applied Behavioral Science, 1972, pp. 35-46.
- Srivastva, S. and Salipante, P.F. Jr. Autonomy in Work, Organization and Administrative Sciences, Vol. 7, No. 1-2, Spring-Summer 1976, pp. 49-60.
- Srivastva, S., Salipante, P.F., Cummings, J.C. Notz, W.W., Bigelow, J., and Waters, J. Job Satisfaction and Productivity. Cleveland: Case Western Reserve University, 1975.
- Strauss, G. Organization Development, in R. Dubin (Ed.), Handbook of Work, Organization and Society. Chicago: Rand McNally, 1976, pp. 617-667.
- Thompson, J.D. Organizations in Action. New York: McGraw-Hill Book Co., 1967, pp. 4-13.
- Trist, E.L. and Bamforth, K.W. Some Social and Psychological Consequences of the Longwell Method of Coal-Getting, Human Relations, Vol. 4, No. 1, 1951.
- Turner, A.N. and Lawrence, P.R. Industrial Jobs and the Worker. Cambridge, Mass.: Harvard University, 1968.
- Vroom, V. Work and Motivation. New York: John Wiley & Sons, 1964, p. 128.
- Walker, C.R. and Guest, R.H. The Man on the Assembly Line. Cambridge, Mass.: Harvard University Press, 1952.
- Walters, R.W. Job Enrichment: Results: Strategies for Successful Implementation. Cambridge, Mass.: Addison-Wesley, 1975.
- Walton, R.E. Two Strategies of Social Change and Their Dilemmas, JABS, Vol. 1, No. 2, 1965, pp. 167-179.

- Walton, R.E. Interpersonal Peacemaking: Confrontations and Third-Party Consultation. Reading, Mass.: Addison-Wesley, 1969.
- Walton, R.E. A Problem-Solving Workshop on Border Conflicts in Eastern Africa, JABS, Vol. 6, No. 4, 1970, pp. 453-489. Comment, pp. 490-501.
- Weisbord, M. The Organization Development Contract. The OD Practitioner. NTL, Vol. 5, No. 2, Summer 1973, pp. 1-4.
- Weisbord, M. The Gap Between OD Practice and Theory - and Publication, JABS, Vol. 10, No. 4, October-December 1974, pp. 476-480.
- White, F. and Lippitt, R. Autocracy and Democracy: An Experimental Inquiry. New York: Harper, 1960.
- Winer, B.J. Statistical Principals in Experimental Design. New York: McGraw-Hill, 1971.
- Wolf, M.G. Need Gratification Theory: A Theoretical Reformulation of Job Satisfaction/Dissatisfaction and Job Motivation, Journal of Applied Psychology, February 1970, P. 87.
- Woodward, J. Industrial Organization: Theory and Practice. London: Oxford University Press, 1965.
- Whyte, W.F. Man at Work. Homewood, Illinois: Irwin-Dorsey, 1961.
- Whyte, W.F., and Hamilton, E.L. Action Research for Management: A Case Report on Research and Action in Industry. Homewood, Illinois: Irwin-Dorsey, 1964.

APPENDICES

APPENDIX A
Organizational Survey

This questionnaire is part of a study to learn more about how soldiers view various aspects of their work life in this unit.

If this study is to be helpful, it is important that you answer each question as thoughtfully and frankly as possible. This is not a test and there are no right or wrong answers.

The completed questionnaires are processed by automated equipment which summarizes the answers in statistical form so that individuals cannot be identified. To ensure COMPLETE CONFIDENTIALITY please do not write your name anywhere on the questionnaire.

ORGANIZATIONAL SURVEY

Privacy Act Statement

The major purpose of this questionnaire is to gather information about the attitudes, opinions, and impressions of people in the unit or work group.

A secondary purpose of the questionnaire is to allow the USAADMIN CNTR to collect data to meet the research, evaluation, and training requirements under the provisions of its assigned mission. The data will be used to prepare evaluation reports for higher headquarters demonstrating the effects of the USAADMIN CNTR's programs, and to conduct research to determine how various management practices affect morale, satisfaction and effectiveness. For these purposes, it is not necessary that the unit be specifically identified.

Your individual responses will be transferred to computer cards to be combined with those of many other people and summarized in statistical form. A report will then be prepared for the commander/supervisor of your unit or work group, or for any others selected at his discretion that will show the average response to each item. This report may also include information about groups selected on the basis of the background information, such as various rank or branch groups. Care will be taken so that no information will be provided that would allow any single individual to be specifically identified by the commander/supervisor.

Compliance is voluntary. There is no effect on the individual for failure to disclose information. However, please answer all statements unless you have an extreme reluctance to do so since your answers will contribute to a more accurate assessment of your unit or work group. You are required to return all sheets of this questionnaire.

This is not a test and there are no right or wrong answers. If the results are to be helpful, it is important that you respond to all statements as thoughtfully and frankly as possible. Please turn the page and read the instructions carefully before you begin responding to the statements. Thank you very much for your cooperation in completing this questionnaire.

AUTHORITY: Title 10, United States Code, Section 3012
PRESCRIBING DIRECTIVE: AR 600-46

US Army Administration Center
Organizational Effectiveness Directorate
Fort Benjamin Harrison, Indiana 46216

(December, 1976)

Question Booklet

DEFINITIONS

Explanation of Terms Most of the terms used in this questionnaire are familiar ones. However, five terms need to be defined. Wherever in the questionnaire you come across these terms, these will be their meanings:

- "unit" - The particular meaning of this term for the questionnaire you are answering will be announced by the person administering the questionnaire. For example, the "unit" may be a company, a troop, etc.
- "mos" - Military occupational specialty. Usually the military training you received to perform your job.
- "super-visor" - That person to whom you immediately report and who usually directs your work.
- "co-workers" - Those people who you associate with from day to day in order to get your job done. They and you usually report to the same supervisor.
- "work group" - That entire team of people, including your co-workers and your supervisor(s) who work for a common goal. For example, all the supervisors and cooks in the dining facility.

Also, all of your responses should refer to your experiences in your present job.

INSTRUCTIONS

- A. Please answer all questions in order.
- B. All of the questions in the survey can be answered by filling in one of the answer spaces ON THE ANSWER SHEET PROVIDED. If you do not find the exact answer that fits your case, use the one closest to it. DO NOT fill in more than one answer space for each question.
- C. Remember, the value of the study depends on your being straightforward in answering the questionnaire. You will not be identified with your answers.

D. This questionnaire is designed for automatic scanning of your responses. Questions are answered by marking the appropriate space on the answer sheet, as in this example:

On The Survey

Answer Scale:

Disagree		Slightly		Agree		Agree
Strongly Disagree	Disagree	Neutral	Slightly Agree	Agree	Strongly	
1	2	3	4	5	6	7

81. It is never hot in Texas.

On the Answer Sheet

	1	2	3	4	5	6	7
81.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

E. Please use the pencil provided, and observe carefully these important requirements:

- Make heavy marks that fill the spaced
- Erase cleanly any answer you wish to change
- Make no stray marks of any kind

SECTION ONE

Instructions

Listed below are a number of statements which could be used to describe a job. You are to indicate whether each statement is an accurate or an inaccurate description of your job. Please do not use this part of the questionnaire to show how much you like or dislike your job. Questions about that will come later. Instead, try to make your descriptions as accurate and as objective as you possibly can.

Fill in a space on the ANSWER SHEET PROVIDED based on this scale.

How accurate is the statement in describing your job?

- | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|----------------------|------------------------|-----------|----------------------|--------------------|------------------|
| Very
Inaccurate | Mostly
Inaccurate | Slightly
Inaccurate | Uncertain | Slightly
Accurate | Mostly
Accurate | Very
Accurate |
| 1. The job requires me to use a number of complex or high-level skills. | | | | | | |
| 2. The job requires a lot of cooperative work with other people. | | | | | | |
| 3. The job is arranged so that I <u>do not</u> have the chance to do an entire piece of work from beginning to end. | | | | | | |
| 4. Just doing the work required by the job provides many chances for me to figure out how well I am doing. | | | | | | |
| 5. The job is quite simple and repetitive. | | | | | | |
| 6. The job can be done adequately by a person working alone - without talking or checking with other people. | | | | | | |
| 7. The supervisors and co-workers on this job almost <u>never</u> give me an "feedback" about how well I am doing in my work. | | | | | | |
| 8. This job is one where a lot of other people can be affected by how well the work is done. | | | | | | |
| 9. The job denies me any chance to use my personal initiative or judgment in carrying out the work. | | | | | | |
| 10. Supervisors often let me know how well they think I am performing the job. | | | | | | |
| 11. The job provides me the chance to completely finish the pieces of work I begin. | | | | | | |
| 12. The job itself provides very few clues about whether or not I am performing well. | | | | | | |
| 13. The job give me considerable opportunity for independence and freedom in how I do the work. | | | | | | |
| 14. The job itself is <u>not</u> very significant or important in the broader scheme of things. | | | | | | |

SECTION TWOInstructions

Now please indicate how you personally feel about your job. Each of the statements below is something that a person might say about his or her job. You are to indicate your own personal feelings about your job by marking how much you agree with each of the statements. Fill in the proper space ON THE ANSWER SHEET PROVIDED for each statement according to the following scale:

How much do you agree with the statement?

- | | | | | | | |
|-------------------|----------|----------|----------|-------|----------|-------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Disagree | | Disagree | | Agree | | Agree |
| Strongly Disagree | Slightly | Neutral | Slightly | Agree | Strongly | |
-
15. It's hard, on my job, for me to care very much about whether or not the work gets done right.
 16. My opinion of myself goes up when I do my job well.
 17. Generally speaking, I am very satisfied with my job.
 18. Most of the things I have to do on my job seem useless or trivial.
 19. I usually know whether or not my work is satisfactory on my job.
 20. I feel a great sense of personal satisfaction when I do my job well.
 21. The work I do on my job is very meaningful to me.
 22. I feel a very high degree of personal responsibility for the work I do on the job.
 23. I frequently think of changing my mos.
 24. I feel bad and unhappy when I discover that I have performed poorly on my job.
 25. I often have trouble figuring out whether I am doing well or poorly on my job.
 26. I feel I should personally take the credit or blame for the results of my work on my job.
 27. I am generally satisfied with the work I do in my job.
 28. My own feelings generally are not affected much one way or the other by how well I do on my job.
 29. Whether or not this job gets done right is clearly my responsibility.

Instructions

SECTION THREE

Now please indicate how satisfied you are with each aspect of your job listed below. Once again, fill in the appropriate space ON THE ANSWER SHEET PROVIDED for each statement according to the following scale.

How satisfied are you with this aspect of your job?

- | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|--|---|---|-----------------------|---------|--------------------|-----------|---------------------|
| Extremely Dissatisfied | | | | | | | |
| | | | Slightly Dissatisfied | Neutral | Slightly Satisfied | Satisfied | Extremely Satisfied |
| 30. The amount of job security I have. | | | | | | | |
| 31. The amount of pay and fringe benefits I receive. | | | | | | | |
| 32. The amount of personal growth and development I get in doing my job. | | | | | | | |
| 33. The people I talk to and work with on my job. | | | | | | | |
| 34. The degree of respect and fair treatment I receive from my supervisor. | | | | | | | |
| 35. The feeling of worthwhile accomplishment I get from doing my job. | | | | | | | |
| 36. The chance to get to know other people while on the job. | | | | | | | |
| 37. The amount of support and guidance I receive from my supervisor. | | | | | | | |
| 38. The degree to which I am fairly paid for what I contribute to this organization. | | | | | | | |
| 39. The amount of independent thought and action I can exercise in my job. | | | | | | | |
| 40. How secure things look for me in the future in this unit. | | | | | | | |
| 41. The chance to help other people while at work. | | | | | | | |
| 42. The amount of challenge in my job. | | | | | | | |
| 43. The overall quality of the supervision I receive in my work. | | | | | | | |

SECTION FOUR

Instruction

Now please think of the other people in your unit who hold the same job you do. If no one has exactly the same job as you, think of the job which is most similar to yours. Please think about how accurately each of the statements describes the feelings of those people about the job. It is quite all right if your answers here are different from when you described your own reactions to the job. Often different people feel quite differently about the same job. Fill in the appropriate space ON THE ANSWER SHEET PROVIDED based on this scale.

How much do you agree with the statement?

1	2	3	4	5	6	7
Disagree		Disagree		Agree		Agree
Strongly	Disagree	Slightly	Neutral	Slightly	Agree	Strongly

44. Most people on this job feel a great sense of personal satisfaction when they do the job well.
45. Most people on this job are very satisfied with the job.
46. Most people on this job feel the work useless or trivial.
47. Most people on this job feel a great deal of personal responsibility for the work they do.
48. Most people on this job have a pretty good idea of how well they are performing their work.
49. Most people on this job find the work very meaningful.
50. Most people on this job feel that whether or not the job gets done right is clearly their own responsibility.
51. People on this job often think of changing their mos.
52. Most people on this job feel bad or unhappy when they find that they have performed the work poorly.
53. Most people on this job have trouble figuring out whether they are doing a good or a bad job.

SECTION FIVE

Instructions

Listed below are a number of characteristics which could be present on any job. People differ about how much they would like to have each one present in their own jobs. We are interested in learning how much you personally would like to have each one present in your job.

Using the scale below, please indicate the degree to which you would like to have each characteristic present in your job. Fill in the appropriate space ON THE ANSWER SHEET PROVIDED.

NOTE: The numbers on this scale are different from those used in previous scales.

4	5	6	7	8	9	10
Would like having this only a moder- ate amount (or less)			Would like having this very much			Would like having this <u>extremely</u> much

YOU SHOULD BE ON NUMBER 54 ON YOUR ANSWER SHEET

54. Stimulating and challenging work.
55. Chances to exercise independent thought and action in my job.
56. Opportunities to learn new things from my work.
57. Opportunities to be creative and imaginative in my work.
58. Opportunities for personal growth and development in my job.

SECTION SIX

Instructions

Now using the one to seven scale, please answer the following questions pertaining to relations between different groups using the following scale. Once again, fill in the appropriate space ON THE ANSWER SHEET PROVIDED.

How would you describe your work group's relations with others?

1	2	3	4	5	6	7
Very		Below		Above		Very
Poor	Poor	Average	Average	Average	Good	Good

59. Generally speaking, how good are the relations between the people in your company and the people who work in other companies in the battalion?
60. Generally speaking, how good are the relations between the people who work in your platoon and the people who work in the other platoons in this company?
61. Generally speaking, how good are the relations between your squad and the other squads in your platoon?
62. Generally speaking, how are the relations between people in your platoon and the first sergeant and company commander?

SECTION SEVEN

Instructions

Listed below are a number of statements which could be used to describe your immediate supervisor (as defined on page 2). You are to indicate how often your immediate supervisor performs each activity and also to indicate how often you would like him to perform each activity. Fill in a space ON THE ANSWER SHEET PROVIDED based on this scale:

1	2	3	4	5	6	7
Never	Very Seldom	Seldom	Occasionally	Often	Very Often	Always

My immediate supervisor helps people in the work group with their personal problems.

63. This is how it is now.

64. This is how I would like it to be.

My immediate supervisor insists that members of the group follow to the letter the standard procedures handed down to him.

65. This is how it is now.

66. This is how I would like it to be.

My immediate supervisor gets the advice from our work group on important matters before going ahead.

67. This is how it is now.

68. This is how I would like it to be.

My immediate supervisor holds regular meetings with our work group.

69. This is how it is now.

70. This is how I would like it to be.

SECTION EIGHT

Instructions

Listed below are a number of statements concerning personal attitudes and traits. Read each item and decide whether the statement is accurate or inaccurate as it pertains to you personally. Fill in the appropriate space ON THE ANSWER SHEET PROVIDED according to the following scale: If you believe the statement to be accurate or true, mark 1 on your answer sheet. If you believe it to be false, mark 2 on your answer sheet.

Example:

101. I like to give and receive military courtesy.

ON ANSWER SHEET

1 2

101. ■ □

1. Before voting I thoroughly investigate the qualifications of all the candidates.
2. I never hesitate to go out of my way to help someone in trouble.
3. It is sometimes hard for me to go on with my work if I am not encouraged.
4. I have never intensely disliked anyone.
5. On occasion I have had doubts about my ability to succeed in life.
6. I sometimes feel resentful when I do not get my way.
7. I am always careful about my manner of dress.
8. My table manners at home are as good as when I eat out in a restaurant.
9. If I could get into a movie without paying and be sure I was not seen, I would probably do it.
10. On a few occasions, I have given up doing something because I thought too little of my ability.
11. I like to gossip at times.
12. There have been times when I felt like rebelling against people in authority even though I knew they were right.
13. No matter who I am talking to, I am always a good listener.
14. I can remember "playing sick" to get out of something.
15. There have been occasions when I took advantage of someone.
16. I am always willing to admit it when I make a mistake.

17. I always try to practice what I preach.
18. I do not find it particularly difficult to get along with loud mouthed, obnoxious people.
19. I sometimes try to get even, rather than forgive and forget.
20. When I do not know something I do not at all mind admitting it.
21. I am always courteous, even to people who are disagreeable.
22. At times I have really insisted on having things my own way.
23. There have been occasions when I felt like smashing things.
24. I would never think of letting someone else be punished for my wrong-doing.
25. I never resent being asked to return a favor.
26. I have never been irked when people expressed ideas very different from my own.
27. I never make a long trip without checking the safety of my car.
28. There have been times when I was quite jealous of the good fortune of others.
29. I have almost never felt the urge to tell someone off.
30. I am sometimes irritated by people who ask favors of me.
31. I have never felt that I was punished without cause.
32. I sometimes think when people have a misfortune they only got what they deserved.
33. I have never deliberately said something that hurt someone's feelings.

SECTION NINEInstructions

For the statistical classification of the large numbers of persons participating in this study, you are asked to provide the following information.

BEGIN YOUR RESPONSES WITH STATEMENT NUMBER 34 ON YOUR
ANSWER SHEET

34. Have you taken this survey before in this unit?

1. Yes
2. No

35. Sex

1. Female
2. Male

36. Education

1. 6th grade to 8th grade
2. 9th grade to 11th grade
3. High school diploma or G.E.D.
4. Some college
5. College degree or higher

37. How long have you been in the Army?

1. 11 months or less
2. 12 to 23 months
3. 24 months to 36 months
4. 37 to 48 months
5. Over 4 years

38. How long have you been in this unit?

1. 3 months or less
2. 4 to 12 months
3. 13 to 24 months
4. 25 to 36 months
5. Over 36 months

39. Ethnic Background

1. White
2. Black
3. Spanish American or Mexican American
4. Asian American
5. Other (e.g., American Indian, Filipino, Korean, Puerto Rican)

40. What is your present marital status?

1. Married
2. Single
3. Divorced
4. Legally separated
5. Widowed

41. Which of the following best describes your career intentions at the present time?

1. I will definitely stay until retirement
2. I will probably stay until retirement
3. I am undecided about staying
4. I will stay for now but will probably leave before retirement
5. I will definitely leave at the earliest opportunity.

42. Military Pay Grade

1. E1 - E3
2. E4
3. E5 - E6
4. E7 - E9
5. WO1 - CW4
6. O1 - O3
7. O4 - O6

43. Location of Residence

1. Barracks
2. BOQ/BEQ
3. On Post Housing
4. Off Post Apartment
5. Off Post House

44. Location of Childhood Home

1. Population less than 25,000
2. Population 25,000 to 49,999
3. Population 50,000 to 99,999
4. Population 100,000 to 250,000
5. Population 250,000 or more

45. Which military branch corresponds the closest with your primary MOS?

1. Infantry
2. Field Artillery, ADA
3. Armor
4. Corps of Engineers
5. Signal Corps
6. Ordnance
7. Quartermaster, Transportation
8. Adjutant General, Finance
9. Military Police, Military Intelligence
10. Medical Corps, MSC, Chaplain

APPENDIX B

The post-test survey consisted of the exact items used in the pre-test survey (Appendix A). In addition, the following seven items which were added at the end of the survey as manipulation checks. Rather than reproduce the entire survey which is already given at Appendix A, the last seven items have been listed as they appear in the post-test.

SECTION TEN

Instructions

This section of the survey deals with activities within your work group during the past three months.

46. Has your platoon leader or platoon sergeant held any meetings with your platoon to discuss work-related problems?
 1. Yes
 2. No
 3. Do not know
47. Has your squad leader or section leader held any meetings with your squad to discuss work-related problems?
 1. Yes
 2. No
 3. Do not know
48. If meetings occurred at either or both platoon and/or squad level, were any plans developed to improve work-related problems?
 1. Yes
 2. No
 3. Do not know
49. If plans to improve work-related problems were developed were they actually carried out?
 1. Yes
 2. No
 3. Do not know

50. Did your platoon and/or squad leader seek your input for suggestions to improve work-related problems?

1. Never
2. Seldom
3. Sometimes
4. Often
5. Always

51. Do you believe that your work group is more effective as a result of the meetings?

1. Yes
2. No
3. Do not know

52. Do you believe that your work group is more effective as a result of the team building activities?

1. Yes
2. No
3. Do not know

APPENDIX C

General Organizational Questionnaire

This survey has been designed to provide feedback to this post about areas of importance to military personnel and to learn more about the day-to-day life in your unit. The purpose is to allow every individual to contribute to an accurate picture of the unit.

This questionnaire is anonymous. The completed questionnaires will be processed by computer and the results summarized in statistical form. Your individual responses will remain strictly confidential since they will be combined with those of many other people. Any background information you provide will be used to sort people into large groups and will not be used to identify you personally.

This is not a test and there are no right or wrong answers. If the results are to be helpful, it is important that you respond to all statements as thoughtfully and honestly as possible. Your ideas are important and can provide a valuable contribution. Do not simply agree with your friends or say what you think others expect you to say.

Please turn the page and read the instructions carefully before you begin responding to the statements. Thank you very much for your cooperation in completing this questionnaire.

Organizational Effectiveness Branch
Human Resources Division
GI/DPCA
Fort Riley, Kansas 66442

GENERAL ORGANIZATIONAL QUESTIONNAIRE

SECTION A

1. This questionnaire has two parts: an answer sheet and a booklet. The section you are now reading is the question booklet. Check to see you have an answer sheet.
2. Read each question carefully.
3. Mark all responses on the answer sheet. Please do not write your response in this booklet.
4. Use a pencil to mark the answer sheet. Mark ONLY ONE response for each question by circling the number best corresponding to your opinion. Erase well any answer you wish to change. Please make no other marks on the answer sheet.
5. Be sure to follow the answer sheet carefully. Match the numbers on each answer sheet with the number of each question.

Explanation of Terms. Most of the terms used in this questionnaire are familiar ones. However, four terms need to be defined. Wherever in the questionnaire you come across these terms, these will be their meanings:

- | | |
|--------------|--|
| "unit" | The particular meaning of this term for the questionnaire you are answering will be announced by the person administering the questionnaire. For example, the "unit" may be a brigade, a battalion, a headquarters, etc. |
| "supervisor" | That person to whom you immediately report and who usually directs your work. |
| "co-workers" | Those people who you associate with from day to day in order to get your job done. They and you <u>usually</u> report to the same supervisor. |
| "work group" | That entire team of people, including your co-workers and your supervisor(s) who work for a common goal. For example, all the supervisors and cooks in the dining facility. |

INSTRUCTIONS Below is a list of incomplete statements. Read each incomplete statement carefully. As soon as you understand it, decide how much you agree with it. Your first impressions are more valuable than your second thoughts. After you have decided on your answer it will be recorded on the ANSWER SHEET that indicates the amount of your agreement.

The following scale is used to indicate your agreement or disagreement with the statements:

1	2	3	4	5
Strongly	Somewhat	Neutral	Somewhat	Strongly
Disagree	Disagree		Agree	Agree

EXAMPLE: I somewhat agree with the statement
 Ft. Riley is a pleasant place to live and work
 1 2 3 4 5

RESPONDENT'S
ANSWER

If not answer category exactly expresses your thoughts, use the best answer available. Be sure to mark only one answer for each statement. Follow the answer sheet carefully. Match the numbers on the answer sheet with the number of each statement.

-
1. The information I receive down through formal channels is generally accurate.
 2. I get all the information I need about what is going on in other sections or departments in my unit.
 3. Work priorities are established in line with the unit's objectives.
 4. Meetings in this unit generally accomplish meaningful objectives.
 5. Decisions are made in this unit at those levels where the most adequate information is available.
 6. Decisions are made in this unit after getting information from those who actually do the job.
 7. People in my work group work hard.
 8. I get a sense of accomplishment from the work I do.
 9. I look forward to coming to work every day.
 10. I want to contribute my best efforts to the unit's mission and my assigned tasks.
 11. This unit has a real interest in the welfare of assigned personnel.
 12. My job helps me to achieve my personal goals.

13. I have enough time off to take care of my personal and family needs.
14. My performance evaluations and efficiency reports have been helpful to me.
15. This unit places a high emphasis on accomplishing the mission.
16. Workload and time factors are taken into consideration in planning our work group assignments.
17. I would like to stay in this unit as long as I can.
18. My unit is respected on this post.
19. The job I have is a respected one on this post.
20. I am not afraid to make an occasional mistake.
21. My unit is willing to try new or improved methods of doing work.
22. There is enough emphasis on competition in this unit.
23. Rules in this unit are enforced.
24. There is little interference from outside units in doing our work.
25. There is a good working relationship between civilian and military personnel in this unit.
26. My job is directly related to meeting the unit's goals.
27. This unit is able to respond to all the demands put on it to accomplish its mission.
28. My supervisor lets me know when I have done my job well.
29. My supervisor makes it easy to tell him when things are not going as well as he expects.
30. When appropriate, my supervisor supports my decisions.
31. It is easy for me to get in to see my supervisor.
32. My supervisor emphasizes teamwork.
33. When there is disagreement, my supervisor encourages the people to work for him/her to openly discuss their differences.

34. I know what my work group is trying to accomplish.
35. My supervisor emphasizes mission accomplishment.
36. My supervisor encourages us to give our best effort.
37. My supervisor maintains high personal standards of performance.
38. Rarely do other people up the chain of command make conflicting demands on me while I am at work.
39. Unless I ask for help, my supervisor lets me do my work without interfering.
40. My supervisor gives clear instructions when he assigns me a task.
41. My supervisor shows me how to improve my performance.
42. My supervisor helps me plan and schedule my work ahead of time.
43. My supervisor ensures that all required materials are available to accomplish the job.
44. My supervisor is able to be heard by and influence those above him.
45. My supervisor is highly regarded as a leader by members of my work group.
46. My co-workers tell me when they think I have done a good job.
47. I have the trust and support of my co-workers.
48. My co-workers work together as a team.
49. My co-workers encourage each other to give their best effort.
50. My co-workers maintain high standards of performance.
51. Open and honest discussion is used when there are disagreements among my co-workers.
52. My co-workers provide the help I need so I can plan, organize and schedule work ahead of time.
53. My co-workers offer each other new ideas for solving job related problems.

54. I feel that I am given adequate authority to perform the tasks and responsibilities assigned to me.
55. I am able to influence my co-workers when we are making group decisions.
56. Information important to our work is widely exchanged within my work group.
57. My work group plans together and coordinates its efforts.
58. I understand what is expected of me on my job.
59. My work group is able to respond on short notice to heavy work demands placed upon it.
60. My work group meets all requirements placed on it by higher levels of command.
61. The supplies and equipment I receive are adequate to perform my work.
62. I am working in the job area for which I have been trained.
63. I am getting the training I need to take on more responsibility.
64. My supervisor is trained for his job.
65. My work group has sufficient qualified personnel to accomplish its mission.
66. Army standards of order and discipline are maintained in my work group.
67. Members of my work group reflect Army standards of military courtesy, appearance and grooming.
68. Cooperation is encouraged between work groups in my unit.
69. When I am doing a job that requires the assistance of another work group, I usually receive the help I need.
70. All in all, I am satisfied with my present job.
71. All in all, I am satisfied with the people in my work group.
72. All in all, I am satisfied with my supervisor.
73. All in all, I am satisfied with my unit.
74. All in all, I am satisfied with my career in the Army.

75. Administering of discipline in my unit is done fairly.
76. I receive fair and objective efficiency reports in this unit.
77. My job provides opportunity for me to advance my skills and/or personal education.
78. I know what I have to do to get recognized for doing a good job.
79. Work assignments are fairly made in this unit.
80. This unit recognizes a person for what he/she does and not just by favoritism.
81. Racial problems in my unit are confronted and dealt with fairly.
82. A spirit of cooperation exists among races in my unit.
83. My unit does not have a drug problem.
84. Excessive drinking is not a problem in my unit.

SUPPLEMENTAL QUESTIONS These next questions are included at the request of agencies on post in order that they may find out how you feel about what they are doing. Your responses will help reveal problem areas for them. Do not answer any questions which do not pertain to you.

The following scale is used to indicate your satisfaction or dissatisfaction with the incomplete statements:

1	2	3	4	5
Completely Dissatisfied With	Mostly Dissatisfied With	Neutral About	Mostly Satisfied With	Completely Satisfied With

LEAVE BLANK: If undecided, no knowledge of, or doesn't relate to you.

85. the services provided by the Post Housing Assignment Office
86. the services provided by the Clothing Sales Store
87. the quality of dayroom facilities
88. the quality of Quartermaster Laundry service
89. the handling of household goods and hold baggage
90. the quality of the Post shuttle bus.
91. If I had my choice I would prefer to live:
 1. Definitely off post
 2. Somewhat prefer off post

3. I have no strong feelings
 4. Somewhat prefer on post
 5. Definitely on post
92. My feelings about the parking of recreation vehicles, campers, boats or other equipment in the housing area is that:
1. They should not be permitted to park there at all.
 2. They should be permitted to be parked there only for temporary periods
 3. I have no feelings one way or the other
 4. As long as they are not a safety hazard it is all right
 5. No limit should be placed on parking them there at all.
93. Which one of the following post Craft Shop services most needs improvement is:
1. Ceramics
 2. Leather work
 3. Wood working
 4. Automotive
 5. Photo lab
94. The one change that would most improve the post theatres, would be:
1. A better selection of movies
 2. Better control over the people in the audience
 3. A wider selection of snack foods
 4. A Saturday matinee for dependent children
 5. More late shows.

GENERAL ORGANIZATIONAL QUESTIONNAIRE

Section B

1. This background information is necessary to get a complete picture of your unit and will be used to sort responses into selected subgroups.
2. Please answer all the questions unless you have extreme reluctance to answer a particular statement.
3. Begin your responses with statement number 131 on your answer sheet.

131. Have you taken this survey before in this unit?

1. Yes
2. No

132. Sex

1. Female
2. Male

133. Education

1. No High School Diploma
2. High School Diploma or G.E.D.
3. College Work, less than a 4 year degree
4. College Work, 4 year degree
5. Graduate Degree

134. How long have you been in the Army, or Civil Service if you are now a civilian?

1. 6 months or less
2. 7 to 18 months
3. 19 months to 4 years
4. 5 to 10 years
5. over 10 years.

135. How long have you been at this installation?

1. 3 months or less
2. 4 to 12 months
3. 13 to 24 months
4. 25 to 36 months
5. over 36 months

136. How long have you been in this unit?

1. 3 months or less
2. 4 to 12 months
3. 13 to 24 months
4. 25 to 36 months
5. over 36 months

137. Ethnic Background

1. White
2. Black
3. Spanish American or Mexican American
4. Asian American
5. Other (e.g., American Indian, Filipino, Korean, Puerto Rican)

138. What is your present marital status?

1. Married
2. Single, never married
3. Divorced
4. Legally separated
5. Widowed

139. Which of the following best describes your career intentions at the present time?

1. I will definitely stay until retirement
2. I will probably stay until retirement
3. I am undecided about staying
4. I will stay for now but will probably leave before retirement
5. I will definitely leave at the earliest opportunity.

IF YOU ARE A CIVILIAN EMPLOYEE SKIP TO STATEMENT 142.

140. Military Pay Grade

1. E1 - E2
2. E3 - E4
3. E5 - E6
4. E7 - E8
5. E9
6. W1 - W4
7. 01 - 03
8. 04 - 05
9. 06
10. 07 - 010

141. Which military branch corresponds the closest with your primary MOS?

1. Infantry
2. Field Artillery, ADA
3. Armor
4. Corps of Engineers
5. Signal Corps
6. Ordnance
7. Quartermaster, Transportation
8. Adjutant General, Finance
9. Military Police, Military Intelligence
10. Medical Corps, MSC, Chaplain

IF YOU ARE MILITARY SKIP TO BLOCK 144.

142. Civilian Wage Classification

1. GS
2. WG
3. WS
4. NAF
5. Other

143. Civilian Pay Grade

1. 2-5
2. 6-8
3. 9-12
4. 13-15
5. 16 or above

144-147. Insert the four-digit UNIT IDENTIFICATION CODE
(one digit in each box) most appropriate to you
from the list provided.

UNIT IDENTIFICATION CODES FOR
INSERTION IN BLOCKS 144 - 147

HHC, 1st Bde.....	0001
1-2 Inf	0002
1-18 Inf	0003
1-63 Arm	0004
HHCm 2d Bde	0005
1-28 Inf	0006
2-63 Arm	0007
4-63 Arm	0008
HHB/DIVARTY	0009
1-5 FA	0010
1-7 FA	0011
3-6 FA	0012
2-76 FA	0013
D Btry, 25 FA	0014
HHC, DISCOM	0015
1st Med Bn	0016
1st S & T Bn	0017
701st Maint Bn	0018

1st AG Co	0019
Other DISCOM units	0020
1-4 CAV	0021
1st Eng Bn	0022
1st Avn Bn	0023
121st Sig Bn	0024
716 MP Bn & 1st MP Co.....	0025
HHC, 937th Eng Gp	0026
34th Engr Bn	0027
541st Maint Bn	0028
16th Cbt Spt Hosp	0029
HHC, 1st Inf Div & Ft. Riley	0030
HHC, USAG	0031
67th Fin Det	0032
USARB	0033
1st MI Bn	0034
Other units not listed above	0035

APPENDIX D

Survey Indices

- I. Job Dimensions: Objective characteristics of the job itself. The self report measure of the job dimensions on the pre-test and post-test surveys have been modeled from those developed by Hackman and Oldham (1974). The job dimensions measured were:
- A. Skill Variety: The degree to which a job requires a variety of different activities in carrying out the work, which involve the use of a number of different skills and talents of the employee.
 - B. Task Identity: The degree to which the job requires the completion of a whole and justifiable piece of work - i.e., doing a job from beginning to end with a visible outcome.
 - C. Task Significance: The degree to which the job has a substantial impact on the lives or work of other people - whether in the immediate organization or in the external environment.
 - D. Autonomy: The degree to which the job provides substantial freedom, independence, and choice to the individual in scheduling his work and in determining the procedures to be used in carrying it out.
 - E. Feedback From the Job Itself: The degree to which carrying out the work activities required by the job results in the employee obtaining information about the effectiveness of his performance
 - F. Feedback From Agents: The degree to which the soldier receives information about his performance effectiveness from supervisors or from co-workers.

G. Dealing With Others: The degree to which the job requires the soldier to work closely with other people (whether other soldiers in the same unit or with others serviced or supported by this soldier).

These dimensions were measured using a seven-point Likert format using the following response set:

1. Very inaccurate
2. Mostly inaccurate
3. Slightly inaccurate
4. Uncertain
5. Slightly accurate
6. Mostly accurate
7. Very accurate

On both surveys, each of the seven job dimensions were measured by two questions. Of the two, one was reversed scored while the other was a direct question. The items used were:

- a) The job requires me to use a number of complex or high level skills (item #1, Appendix A: Variety).
- b) The job is quite simple and repetitive. (item #5, Appendix A, reverse scored: Variety).
- c) The job is arranged so that I do not have the chance to do an entire piece of work from beginning to end. (item #3, Appendix A, reverse scored: Identity).
- d) The job provides me the chance to completely finish the piece of work I begin. (item #11, Appendix A: Identity).
- e) This job is one where a lot of other people can be affected by how well the work gets done. (item #8, Appendix A: Significance).

- f) The job itself is not very significant or important in the broader scheme of things. (item #14, Appendix A, reverse scored: Significance).
- g) The job denies me any chance to use my personal initiative or judgment in carrying out the work. (item #9, Appendix A, reverse scored: Autonomy).
- h) The job gives me considerable opportunity for independence and freedom in how I do the work. (item #13, Appendix A: Autonomy).
- i) Just doing the work required by the job provides many chances for me to figure out how well I am doing. (item #4, Appendix A: Feedback from Job).
- j) The job itself provides very few clues about whether or not I am performing well. (item #12, Appendix A, reverse scored: Feedback from Job).
- k) The supervisors and co-workers on this job almost never give me any "feedback" about how well I am doing in my work. (item #7, Appendix A, reverse scored: Feedback from Agents).
- l) Supervisors often let me know how well they think I am performing the job. (item #10, Appendix A: Feedback from Agents).
- m) The job requires a lot of cooperative work with other people. (item #2, Appendix A: Dealing with others).
- n) The job can be done adequately by a person working alone - without talking or checking with other people. (item #6, Appendix A, reverse scored: Dealing with others).

The internal reliability coefficients for the pre and post surveys for the Job Dimensions composite were .745 and .740 respectively, yielding an average reliability accross both surveys of .742.

II. Experienced Psychological States: The psychological impact of the job on the soldiers. The theory which gave rise to this survey adaptation is based on the research by

Turner and Lawrence (1965), Hackman and Lawler (1971), and Hackman and Oldham (1974). Briefly, the basic theory proposes that positive personal and work outcomes (high internal motivation, high work satisfaction, high quality performance, and low absenteeism and turnover) are obtained when three psychological states are present. These are:

- A. Experienced Meaningfulness of the Work: The degree to which the soldier experiences his job as one which is generally meaningful, valuable and worthwhile.
- B. Experienced Responsibility for the Work: The degree to which the soldier feels accountable and responsible for the results of the work performed.
- C. Knowledge of Results: The degree to which the employee knows and understands on a continuous basis how effectively he is performing his job.

The theory proposes that the three psychological states are created by the presence of five job dimensions. Experienced Meaningfulness of Work is enhanced by the job dimensions skill variety, task identity, and task significance. Experienced Responsibility for Work Outcomes is increased when a job has a high degree of autonomy. Knowledge of Results is increased when a job is high on feedback.

These dimensions were measured using a seven-point Likert-type format using the following response set:

1. Disagree Strongly
2. Disagree
3. Disagree Slightly
4. Neutral
5. Agree Slightly
6. Agree
7. Agree Strongly

On both the pre-test and the post test, the three psychological states were measured by the following items:

- a) Most of the things I have to do on my job seem useless and trivial. (item #18, Appendix A, reverse scored: Meaningfulness).
- b) The work I do on my job is very meaningful to me. (item #21, Appendix A: Meaningfulness).
- c) Most people on this job feel that the work is useless or trivial (item #46, Appendix A, reverse scored: Meaningfulness).
- d) Most people on this job find the work very meaningful . (item #49, Appendix A: Meaningfulness).
- e) It's hard on my job, for me to care very much about whether or not the work gets done right. (item #15, Appendix A, reverse scored: Responsibility).
- f) I feel a very high degree of personal responsibility for the work I do on my job. (item #22, Appendix A: Responsibility).
- g) I feel I should personally take the credit or blame for the results of my work on the job. (item #26, Appendix A: Responsibility).
- h) Whether or not this job gets done right is clearly my responsibility. (item #29, Appendix A: Responsibility).
- i) Most people on this job feel a great deal of personal responsibility for the work they do. (item #47, Appendix A: Responsibility).

- j) Most people on this job feel that whether or not the job gets done right is clearly their own responsibility. (item #50, Appendix A: Responsibility).
- k) I usually know whether or not my work is satisfactory on my job. (item #19, Appendix A: Knowledge of Results).
- l) I often have trouble figuring out whether I am doing well or poorly on my job. (item #25, Appendix A: reverse scored: Knowledge of Results).
- m) Most people on this job have a pretty good idea of how well they are performing their work. (item #48, Appendix S: Knowledge of Results).
- n) Most people on this job feel that whether or not the job gets done right is clearly their own responsibility. (item #50, Appendix A: Knowledge and Results).
- o) Most people on this job have trouble figuring out whether they are doing a good or a bad job (item #53, Appendix A, reverse scored: Knowledge of Results).

The internal reliability coefficients for the pre and post surveys for the Psychological States composite were .823 and .795 respectively, giving an average reliability across both surveys of .809.

III. Affective Responses to the Job: The individual reactions or feelings a soldier has from working on his job. The affective measures used were:

- A. General Satisfaction: An overall measure of the degree to which the soldier is content or happy in his work. Previous research by Hackman and Lawler (1971) and Frohman, Weisbord, and Johnson (1971) found that this measure has been shown to predict both absenteeism and turnover. That is, the lower the general satisfaction the higher the absenteeism and turnover.
- B. Internal Work Motivations: The degree to which the employee is self motivated to perform effectively on the job. This measure has been shown previously to relate to the quality of the employee's work. The term

I use is improve effectiveness (quality) of work.

- C. Specific Satisfactions: These consist of several short scales which tap specific aspects of the employee's job satisfaction. They all relate positively to the general satisfaction measure but the specific satisfaction with higher growth needs relates most strongly to the characteristics of jobs themselves.

These affective responses were measured using a seven-point Likert-type format using the response set listed below:

1. Disagree Strongly
2. Disagree
3. Disagree Slightly
4. Neutral
5. Agree Slightly
6. Agree
7. Agree Strongly

On both the pre-test and the post test, the Affective Responses to the job were measured by the following items:

- a) Generally speaking, I am very satisfied with my job. (item #17, Appendix A: General Satisfaction)
- b) I frequently think of changing my MOS. (item #23, Appendix A, reverse scored: General Satisfaction).
- c) I am generally satisfied with the kind of work I do in my job. (item #27, Appendix A: General Satisfaction).
- d) Most people on this job are very satisfied with the job. (item #45, Appendix A: General Satisfaction).
- e) People on this job often think of changing their MOS. (item #51, Appendix A: reverse scored: General Satisfaction).

- f) My opinion of myself goes up when I do my job well. (item #16, Appendix A: Internal Work Motivation).
- g) I feel a great sense of personal satisfaction when I do my job well. (item #20, Appendix A: Internal Work Motivation).
- h) I feel bad and unhappy when I discover that I have performed poorly on my job. (item #24, Appendix A: Internal Work Motivation).
- i) My own feelings generally are not affected much one way or the other by how well I do on my job. (item #28, Appendix A, reverse scored: Internal Work Motivation).
- j) Most people on this job feel a great sense of personal satisfaction when they do the job well. (item #44, Appendix A: Internal Work Motivation).

The internal reliability coefficients for the pre and post surveys for the General Satisfaction composite were .763 and .742 respectively, yielding an average reliability across both surveys of .752. The coefficients for Internal Work Motivation composite were .817 and .818, with an average of .817.

On the Specific Job Satisfaction composite the following groups of questions were used to measure pay, security, social, supervisory, and growth need satisfaction. The beginning of each question was "How satisfied are you with this aspect of your job?"

- a) The amount of pay and fringe benefits I receive. (item #31, Appendix A: Specific Satisfaction, Pay).
- b) The degree to which I am fairly paid for what I contribute to this organization. (item #38, Appendix A: Specific Satisfaction, Pay).
- c) The amount of job security I have. (item #30, Appendix A: Specific Satisfaction, Security).

- d) How secure things look for me in the future in this unit. (item #40, Appendix A: Specific Satisfaction, Security).
- e) The people I talk to and work with on my job. (item #33, Appendix A: Specific Satisfaction, Social).
- f) The chance I get to know other people while on the job. (Item #36, Appendix A: Specific Satisfaction, Social).
- g) The chance to help other people while at work. (item #41, Appendix A: Specific Satisfaction, Social).
- h) The degree of respect and fair treatment I receive from my superior. (item #34, Appendix A: Specific Satisfaction, Supervisory).
- i) The amount of support and guidance I receive from my supervisor. (item #37, Appendix A: Specific Satisfaction, Supervisory).
- j) The overall quality of the supervision I receive in my work. (item #43, Appendix A: Specific Satisfaction, Supervisory).
- k) The amount of personal growth and development I get in doing my job. (item #32, Appendix A: Specific Satisfaction, Growth need).
- l) The feeling of worthwhile accomplishment I get from doing my job. (item #35, Appendix A: Specific Satisfaction. Growth Need).
- m) The amount of independent thought and action I can exercise in my job. (item #39, Appendix A: Specific Satisfaction, Growth Need).
- n) The amount of challenge in my job. (item #42, Appendix A: Specific Satisfaction, Growth Need).

The internal reliability coefficients for the specific satisfaction composite were .871 and .894 for an average reliability of .882 for both surveys.

IV. Higher Order Growth Need Strength: These scaled items measure an individual difference among soldiers. That is, they measure the degree to which each soldier has a strong versus weak desire to obtain higher order growth satisfaction from work. Individuals high on this measure have been shown to respond positively (i.e. with high satisfaction and internal work motivation) to complex challenging jobs; individuals low on this measure tend not to find such jobs satisfying or motivating (Hackman and Oldham 1974). A composite of five items were adapted from Hackman and Oldham (1974) was used to measure the level of opportunity soldiers "would like" to have to satisfy higher order needs through their work. To emphasize to the respondents that most items are seen as desirable to most people, the seven point response scale ranged from "Would like having this only a moderate amount - or less" through "Would like having this very much" to "Would like having this extremely much". To further emphasize the fact that these items were to be marked differently from those in previous sections, the numerical values on the response scale ranged from 4 to 10. The five items given on both surveys were:

- a) Stimulating and challenging work. (item #45, Appendix A: Higher Growth Need).
- b) Chance to exercise independent thought and action in my job. (item #55, Higher Growth Need).
- c) Opportunities to learn new things from my work. (item #56, Appendix A: Higher Growth Need).

- d) Opportunities to be creative and imaginative in my work. (Item #57, Appendix A: Higher Growth Need).
- e) Opportunities for personal growth and development in my job. (item #58, Appendix A: Higher Growth Need).

The internal reliability coefficients for the pre and post surveys were .856 and .884. The average internal consistency reliability for higher order need strength was .870.

V. Intergroup Relations: Four items were used to measure the quality of intergroup relations at all levels within each company. The items were scored based upon the following scale "How would you describe your work group's relations with others?"

- 1. Very poor
- 2. Poor
- 3. Below Average
- 4. Average
- 5. Above Average
- 6. Good
- 7. Very good

The specific items were:

- a) Generally speaking, how good are the relations between the people in your company and the people who work in other companies in the battalion? (item #59, Appendix A: Group Relations).
- b) Generally speaking, how good are the relations between the people who work in your platoon and the people who work in other platoons in this company? (item #60, Appendix A: Group Relations).

- c) Generally speaking, how good are the relations between the people who work in your platoon and the people who work in other platoons in this company? (item #61, Appendix A: Group Relations).
- d) Generally speaking, how are the relations between people in your platoon and the first sergeant and company commander? (item #62, Appendix A: Group Relations).

The internal reliability coefficients for the pre and post surveys were .694 and .681. The average internal consistency reliability for the intergroup relations composite was .687.

VI. Supervisory Consideration: The degree to which the immediate supervisor provides the support and interest in the subordinate's problems. Four questions were asked. Each question was answered twice: "This is how it is now", "This is how I would like it to be". The seven point scale used was:

- 1. Never
- 2. Very seldom
- 3. Seldom
- 4. Occasionally
- 5. Often
- 6. Very Often
- 7. Always

The four items answered under two conditions: (1) supervision as it is now items #63, 65, 67, 69 and (2) supervision as soldiers would like it to be items #64, 66, 68, 70.

- a) My immediate supervisor helps people in the work group with their personal problems. (items #63, 64, Appendix A: Supervisory Consideration).
- b) My immediate supervisor insists that members of the group follow to the letter standard procedures handed down to him. (items #63, 66, Appendix A: Supervisory Consideration).

- c) My immediate supervisor gets the advice from our work group on important matters before going ahead. (items #67, 68, Appendix A: Supervisory Consideration).
- d) My immediate supervisor holds regular meetings with our work group. (items #69, 70, Appendix A: Supervisory Consideration).

The internal reliability coefficients for the supervisory consideration now composite were .725 and .604 for an average reliability of .664 for both surveys. The internal reliability coefficients for the supervisory consideration as soldiers would like it to be were .761 and .702 for an average reliability of .731 for both surveys.

In addition to the composite dimensions taped in the first seventy items, a social desirability response scale Crowne-Marlowe, (1964) was used as a manipulation check. This thirty-three item scale was used to determine if the respondent was answering each survey as he honestly felt about each item rather than as he thought he ought to respond to please the researcher. Evidence of social desirability in self-report instruments has been reported by Rosenberg (1969) from laboratory experiments. Although it is not known much evaluation apprehension occurs in field sittings, which treatments which last over a period of time, Golembiewski and Munzenrider (1973) indicate that five to seven percent of the total variance in self report instruments could be explained by social desirability on the part of respondents. Therefore, it is plausible to assume that some self report effects attributed to treatments may be confounded with socially desirable responses. An

analysis of social desirability for each platoon size work group revealed that those platoons (groups) in the experimental conditions were not significantly different from the platoons (groups in the placebo and control treatments. A more detailed analysis of the group comparison has been given at tables 30 and 31.

Other manipulation checks: In addition to the dual item direct score and reversed score items and the social desirability scale, each respondent was asked if he had taken this survey before in this unit. Those respondent's who answered yes to this question when the survey was given as a pre-test had their answer sheets removed. The respondents who did not score reasonable response set choices (i.e., persons who marked items #1 or #10 consistently for each question were removed). Whereas the respondee's participation was completely voluntary as evidenced by 12 persons refusal to participate, nine others chose to "play games" with unreasonable responses rather than not participate.

On the post test seven additional questions were added as manipulation checks on the independent variable. These questions were added at the end of the survey and were prefaced with the statement that "this section of the survey deals with activities within your work group during the past three months". Using a forced choice Yes, No, Don't Know format, the respondents answered the following questions:

- a) Has your platoon leader or platoon sergeant held any meetings with your platoon to discuss work-related problems? (item #46, section 10; Appendix B).
- b) Has your squad leader or section leader held any meetings with your squad to discuss work-related problems? (item #47, section 10: Appendix B).
- c) If meetings occurred either on both platoon and/or squad level, were any plans developed to improve work related problems? (item #48, section 10: Appendix B).
- d) If plans to improve work-related problems were developed, were they actually carried out? (item #49, section 10: Appendix B).
- e) Did your platoon and/or squad leader seek your input for suggestions to improve work-related problems? (item #50, section 10: Appendix B). (Note the scaling on this particular item had five anchor points: 1) Never 2) Seldom 3) Sometimes 4) Often 5) Always).
- f) Do you believe that your work group is more effective as a result of the meetings? (item #51, section 10: Appendix B).
- g) Do you believe that your work group is more effective as a result of the team building activities? (item #52, section 10: Appendix B).

VITA

VITA

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Hanes, P., Adams, J., Lloyd, R., and Woodman, R. "Career Planning Who's Ready For it?" Journal of College Placement. (in press).

Adams, J. "An Evaluation of Leadership Performance Measures Within the R.O.T.C. Training Program" HQ AROTC TRADOC March 1976.

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In Preparation:

"Perceptions of Information Practices, Invasion of Privacy and Confidentiality."

"Individual Choice Feedback Versus Group Consensual Validation."

"The Case of the Weak Boundary Person."